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### A DIABETIC SURVEY.<sup>1</sup>

By EUSTACE RUSSELL, M.D., M.R.C.P.  
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Most of you know that for some years there has been established at the Brisbane Hospital an out-patient clinic which is devoted exclusively to the treatment of diabetics. All of you know that in 1922 the epoch-making discovery of Banting and Best was made public, and in 1923 the use of insulin was adopted in Australia. I had the good fortune in 1923 to be asked to use insulin in the treatment of the patients with *diabetes mellitus* who came under my care, and at that time Dr. Quinn was my house physician. He suggested to me a few weeks ago that I should make some sort of statement as to what has happened in the Brisbane

Hospital in the treatment of diabetes in the intervening space of time. Dr. Quinn and I had the privilege of treating possibly the very first cases of diabetes to be treated in Queensland by insulin; certainly we had the official *imprimatur* in carrying out that treatment, and the first two patients we had were a young girl and a middle-aged woman. I think we may say that both Dr. Quinn and I had, so to speak, "the wind up" in commencing the treatment, because both he and I, as well as the patients, had had a considerable opportunity of reading the alarmist notices in the lay Press, and I think that patients suffered more from the alarm than we did; one thing is certain, that, like all other innovations, the use of insulin caused a certain amount of consternation. I saw at that time that there was a necessity for some sort of organization for the treatment of *diabetes mellitus*, and there was established at the Brisbane Hospital, as a sort of unofficial annex to the other out-patient

<sup>1</sup> Read at a meeting of the Queensland Branch of the British Medical Association on April 7, 1933.

activities, a clinic for the treatment of diabetics. This was, I may say with a certain amount of pride, my own idea, and I have, with a certain amount of satisfaction, been the sole director of that clinic since then. I do not say for one moment that the clinic is by any means as efficient as it should be. I visualized at the time a very important undertaking, and I can see now, despite our failure in very many respects, a considerable success in the treatment of diabetes, in that we have managed to marshal under one group or firm most of the diabetics who pass through the hospital; and we are able in case of serious catastrophe to any of the individual members of that clinic at once to grasp the possible seriousness of their condition should they be admitted, for instance, in coma, and to deal with the matter urgently and efficiently. We still have under our care, and earning his living, the third patient who was admitted with diabetes, and who was treated with insulin, and he is still keeping his family and maintaining his health. He has, in addition, a wonderful record of his own case, and he exemplifies to the very fullest the fact that even a very severe diabetic, assuming that he has some appreciation of the treatment of his condition, can live and enjoy good health, and be a useful member of society, even though he has to diet himself strictly and to use large quantities of insulin every day. The usefulness of such a clinic as operates in the Brisbane Hospital is somewhat discounted by the fact that we have not the time to devote to the proper guidance of diabetics, and we have not the staff and skill permanently employed in the teaching and guiding of the patient. I think we should have, as part of the routine of the hospital, a proper department especially equipped and specially staffed for the treatment of metabolic diseases, and the frequency of diabetes in this community emphasizes the necessity for a separate department with proper control. I think, however, that the department which we initiated has been of some service to the hospital and to the community, and when I tell you how many patients have passed through our hands in the last two years, I think you will be astounded at the work that has been done in an under-equipped, under-staffed and more or less unappreciated community. I asked my resident medical officer, Dr. Hemsley, to make a survey of the cases which had passed through the diabetic clinic since its inception, but he found that the records were so bad and so incomplete that he had to confine himself to a survey of those cases which had occurred in the last five years, that is, since January 1, 1928. I think you will be surprised to know that since 1928, 510 diabetics have been admitted to the Brisbane Hospital, and of these only 56 have been admitted on more than one occasion. Of the total number, 230 were males and 280 were females, so that you will see by percentage that, surprisingly enough, 56% of the patients admitted were females. We have made, as a matter of interest, an inquiry into where these people

were born, and we find that 247, or 49%, were born in Australia, 136, or 29%, were born in England, 31, or 6%, were born in Scotland, 20 patients, or 4%, were born in Ireland, and 76, or 15%, were born in other countries. Of these patients the number who died under our care was 48, which is 9%, and this is rather less, I am given to understand, than the average in Australia. Now, as to the age of the various people who have come under our survey: of those who died, the average age was high and was fifty-seven years, the youngest patient among our fatal cases was thirteen and the oldest was eighty-five. We had only two patients who died below the age of thirty years, one of thirteen and one of twenty-seven; five patients were under forty and seven were under fifty.

I am going to speak to you later on the treatment of *diabetes mellitus* and its complications, but I should like to point out to you that the complications of diabetes are of very great importance in the treatment of the disease itself. Excluding coma, I am considering only those cases whose prognosis was greatly affected by any complication, and I will just detail the various complications which did arise and had to be treated as separate entities from the diabetic condition or concurrent with it, and the most important are these: Gangrene occurred in fifteen cases; seven patients were operated upon. Renal and cardiac failure occurred in thirteen cases and included two cases of coronary thrombosis. Of cancer there were three cases, one of the breast, one of the omentum, and one of the vulva. There were three cases of cerebral thrombosis, one case of cerebral hæmorrhage, two cases of gastro-enteritis, two cases of lobar pneumonia, one case of tuberculous bronchopneumonia, one case of pulmonary tuberculosis, one case of pyæmia, one case of senility, one acute necrosis of the pancreas, one case of cystic degeneration with cirrhosis of the pancreas, and six cases of uncomplicated *diabetes mellitus*, and these cases include an acute necrosis and cystic degeneration, that is to say, these last six were cases in which the pancreas was directly involved. Now, it is interesting to note that of all the patients who were admitted under our care, less than half were treated with insulin; actually 223 were treated with insulin, which is about 45%. And now a word about the patients admitted in coma. I will have something to say in a later stage of this survey on the question of diabetic coma, and, as this complication is the bugbear of practitioners who have to do with *diabetes mellitus*, it is important that they should know and take comfort from the success, or lack of success, that those of us have had in the treatment of coma when we are fortunate enough to have a laboratory accessible and expect to have a resident medical officer always on the job and to have competent nurses to deal with the patients. When we first dealt with the treatment of coma in diabetes, I was worried as to what standard of treatment to adopt, and the more I see of diabetic coma, the more I appreciate that no standard can be set for the treatment of this

complication; but I realize, as most of you will probably realize, that the individual estimate of the individual case is of paramount importance. I will deal with the treatment of coma in a few minutes. There have been admitted in the last five years to the Brisbane Hospital in coma, that have come under my purview, thirty-eight patients; of these thirty-seven were admitted in hyperglycæmia, and of this number ten died. One patient was admitted in hypoglycæmia, and this patient also died. We had, therefore, eleven deaths, which approximates 28%. I will tell you in the course of this survey the importance of the differential diagnosis between hyperglycæmia and hypoglycæmia in diabetics who are taking insulin. I will, however, tell you now that I do not think any nurse who has been through my wards at the Brisbane Hospital would hesitate to give you a very rapid and fairly complete differential diagnosis in symptomatology between hyperglycæmia and hypoglycæmia, and the nursing of my diabetics at the Brisbane Hospital has been a source of very great comfort to me on account of the keenness and intelligence shown by the nursing staff. The youngest patient with coma who came under our view was thirteen, and this patient died. The oldest was seventy-five, and this patient lived. A further analysis of the eleven fatal cases of coma illustrates how difficult it is to do the impossible, and, however heartbreaking a record such as we tell may appear to be, it is not so bad when the analysis is given out. In two of these fatal cases the patients were known to have a previous myocardial degeneration. One of them had cystic degeneration and cirrhosis of the pancreas. One had cerebral hæmorrhage, one had acute cardiac failure with pulmonary œdema, one had uræmia, one had hypoglycæmia with pulmonary tuberculosis, one had gangrene, and one had been admitted in coma four times in eight months (indeed every time he had backed the winner of an important race anywhere in the Commonwealth) and was so much beloved by his connexions that his wife would not leave the wash-tub to be at his bedside.

To continue the further analysis of the 510 cases and the complications of other conditions which were present, it is interesting to know that skin infections and infections of the subcutaneous tissues were relatively common; there were 45 cases which included boils, carbuncles, abscesses and cellulitis. High blood pressure and arteriosclerosis, which, as you know, are common concomitants of *diabetes mellitus*, accounted for 42 cases. Heart complications were responsible for 30 cases; and pulmonary disease, including bronchial conditions, accounted for 27. Of these pulmonary conditions there were seven cases of pulmonary tuberculosis, six cases of asthma, five of bronchitis, two of bronchopneumonia, two of lobar pneumonia, two of bronchiectasis, and three of influenza. There were 30 cases of gangrene of the extremities, 19 cases of cataract, 17 of arthritis, 15 of chronic infections of the nasal accessory

sinuses, 11 of albuminuria, 10 of retinitis, 13 of *pruritus vulvæ*, 11 of cystitis or pyelitis, eight of malignant disease, eight of gynecological disease, seven of gastro-enteritis, seven fractures, five herniæ, five insanities, eight cases of peripheral neuritis, four of pancreatitis, three of cholecystitis, three of prostatomegaly, four, and more, cases of carotinæmia, three cases of hæmochromatosis, two of syphilis, one case of *paralysis agitans*, one of appendicitis, one of conjunctivitis, one of acromegaly, one of myxœdema, one of progressive lenticular degeneration, one of gastric ulcer.

In regard to the surgical procedure, 25 major operations were performed under general anaesthesia, and seven of the patients died subsequently; in all these cases the operation of amputation for gangrene was undertaken. It is interesting to note that in all cases the anæsthetic used was either ether or gas and oxygen.

Now just a word on the subject of the out-patient clinic. There are at present, you will be surprised to hear, a total number of 217 patients under supervision at the out-patient clinic, and of these 83 are males and 134 are females. Again, it is an interesting fact that of those patients 135 have not received insulin at any stage of their treatment, and of these 43 are males and 92 females. Of the others, a total of 56 have been on insulin from the very beginning, and of these, 29 are males and 27 are females.

And now let me explode a popular superstition in regard to the necessity for continuing treatment with insulin once it has been begun. We have a series here of 16 cases in which insulin has been used at the beginning of treatment, and in which it has now ceased to be used. The patients are perfectly well and continue their daily avocation, and of these 13 are females and three are males. On the other hand, we have a series of patients who appeared to do well enough at the beginning of treatment without insulin at all, but whose sugar tolerance apparently either diminished or we lacked an appreciation of their sugar tolerance—in the first instance. We have had to administer to these patients insulin in varying doses; of a total of twelve, seven are males and five are females. The total number who are receiving insulin at the present moment is 82.

#### Treatment Adopted at the Clinic.

I have given you sufficient in the way of statistics to impress upon you the enormous scope for the treatment of the diabetic patient, and now let me consider briefly the treatment that we adopt in the Brisbane Hospital for the average diabetic. Let me impress upon you that glycosuria and diabetes are not one and the same thing, and even if one says with emphasis that when a considerable amount of sugar is found in the urine the condition is certainly one of *diabetes mellitus*. There are cases which quite frequently crop up in which the condition is not a diabetic one at all, and I myself have "fallen in" on quite a number of occasions.



First of all let us consider the testing of the urine. We use in the Brisbane Hospital Benedict's qualitative solution as a routine, and every specimen of urine is tested as a routine for sugar, albumin, pus, acetone, and diacetic acid, so that very little in the way of chemical examination is left to chance. Now you all know that some substances in the urine will reduce the testing fluid, and although that is a more or less negligible possibility, still, it does occur.

Quite recently, in a case which I saw with one of my colleagues, a gross, fat man, over-weight, over-fed and under-exercised, I found a substance in the urine which reduced sugar. My colleague, with all his care, had discovered no reducing substance, and he was somewhat surprised to find that he had missed the point. As a matter of fact, the man had a perfectly normal blood sugar curve, and was not a diabetic at all. I think probably that it was creatinin which caused a reduction in the urine.

Within the last few weeks we had a patient with myxodema, also a diabetic, whose condition as a diabetic improved rapidly under dietetic treatment, and for whose myxodematous state we prescribed thyroid gland. Within a fortnight that patient, despite accurate dieting, had sugar in considerable quantity in the urine.

That illustrates the effect of thyroid secretion on the blood sugar, and has to be borne in mind as one of the possible causes of glycosuria. Fright or nervous excitement, you all know, will cause glycosuria, owing to the hyperaction on the adrenal glands, and this has often been exemplified in cases of stress. Certain drugs, phloridzin, for instance, will cause glycosuria, and one always has to be aware of the odd case of lactosuria, particularly in patients who are or who are suspected of being pregnant. I had one experience of lactosuria in a pregnant woman, which caused me considerable heartburnings and I nearly upset her physiological condition. Moreover, one has to remember that a great many cases of what is known as renal glycosuria are alleged to occur; in this condition there is a very low threshold, and sugar shows in the urine at a very low blood sugar concentration. Now, in my experience, these cases are extremely rare, but those who have written considerably and with authority on glycosuria and diabetes allege that they are very common. However, in all of the 510 cases reported to you in this survey not a single one of renal glycosuria comes under consideration, and it was only the other day that we had a case which was definitely of that type. In the whole of the ten years of this diabetic clinic only three cases definitely have occurred, and one of the patients, I remember, eventually developed *diabetes mellitus*. The last patient, who was in my ward only a few days ago, was a woman in her early twenties; she also suffered from an ovarian cyst. By a curious coincidence, Dr. Ellis Murphy had also mentioned to me a case of severe glycosuria which had cleared up on tapping a large ovarian cyst, and I am wondering whether there is some connexion between a cystic ovary and the glycosuria. I do not know, but it seems more than a coincidence that the two cases should be of a similar type. Dr. Murphy did not tell me whether

his patient was a true diabetic or not, but merely told me of the glycosuria, which disappeared on tapping the ovarian cyst; but it is a matter worthy of further consideration. Maclean quotes in his book of 1922, 48% showing a renal curve, and I do not think our number of cases would amount to 0.4%. Personally, I think that renal glycosuria is extremely rare, and I look upon it with an eye of very grave suspicion and regard the condition not so much as a freak, but as a definite metabolic outrage.

#### Treatment of an Ordinary Case of Diabetes.

And now just briefly let us deal with the treatment of an ordinary case of *diabetes mellitus*. We first of all attempt to establish that the patient is suffering from hyperglycemia, and having done that, try to find the easiest and the shortest and the cheapest way of dealing with the condition. Some cases of *diabetes mellitus* are so mild that the mere control of the diet intake suffices to put the patient on an even keel, and if they can appreciate the good advice which is given to them in the matter of diet, they rapidly recover and remain perfectly well. This is particularly true of the fat, middle-aged diabetic. It merely means the cutting out of gross carbohydrates and the institution of a more sensible *régime*. There are some cases difficult enough to explain from an ætiological point of view; in these there is a brief metabolic upset with glycosuria and hyperglycemia, the patients recover very rapidly, and the symptoms do not recur. These I regard as being toxic or infective pancreatic conditions, and they, too, are commoner in the middle decades of life.

The next point which one has to consider is the question of diet, and I think it is wise, when the first essay is made to treat the diabetic, if it is at all possible, to have the patient under skilled nursing supervision in a hospital which has adequate skilled nursing. Quite a number of hospitals find it difficult or irksome or distasteful to worry about diabetics, but those who are interested find that the result well repays the effort. In my own experience at the Brisbane Hospital I have been more than satisfied with the efforts from the nursing and the dietetic standpoint, not that the dietician is not indeed necessary as a standard part of the staff of the hospital, but for the moment our nursing staff and kitchen staff are rendering good service. The patients should be put at rest, physically and mentally, and if their condition warrants it, they should be put on a starvation diet for twenty-four, forty-eight or more hours until the urine becomes sugar-free. They can be given during that alleged starving period sufficient quantities of water or soda water or beef tea, or plain tea without sugar or milk, to satisfy their thirst and their general physical requirements, and, if necessary, a quantity of alcohol may be added in the form of whisky or brandy, should the patient feel that he is suffering unduly from weakness. This is, I think, the most logical way of



commencing the treatment of *diabetes mellitus*, because it gives the metabolic processes throughout the body a rest and a chance of recovering their function. Particularly does it give the pancreas an opportunity of, so to speak, getting its breath, and I really think, from the point of view of perfection, it is the best way to start dealing with the case. One has to remember, of course, that thin diabetics with acidosis, or those who have been previously starved, or those who have had insulin, or those who show any signs of symptoms of acidosis, are not subjects to play with, and then one may have to reconsider how the treatment shall be commenced, or whether starvation is justifiable. It is useful to remember that starving for two or three or four or five days, or even more, causes practically no distress to the patient, and in the absence of definite acidosis is devoid of danger, and we have learnt through the years that you can take risks which are not really risks, by starving patients who show quite a definite quantity of acetone in their urine.

The next way to deal with diabetics is by putting them on their metabolic requirement from the beginning. When Dr. Sheil was my resident medical officer some years ago, we started on that method and we found that quite a number of patients improved, even after they had sugar in their urine, if we persisted for a week or two on that diet. One patient whom we treated was reported to me quite recently from an outside source as being perfectly well and perfectly happy without insulin after quite a considerable number of years. The question as to how much is the basal metabolic requirement of an individual varies quite considerably, but you can assume for all ordinary purposes that not less than fifteen calories per kilogram of body weight is the minimum which you can allow to a diabetic. It is better, if possible, to allow more, up to 25 calories per kilogram of body weight, and we generally allow that amount in dealing with our patients in hospital. We do not do that because it is the ideal method, but because we get a better idea as to the patient's requirement: requirement as to food, and requirement as to insulin; and you must remember that the patients we see, almost without exception, are people who have to work for their living. We deliberately set a high standard of requirement so that we may discharge them from hospital in a minimum space of time, and because we find out more quickly whether those patients are going to require insulin for the treatment of their case.

Now, with regard to diet, it is superfluous to stress the fact that no gross carbohydrates are to be used in the diet. Sugar, sweets, jams, preserves and so forth are definitely banned, and the training of the diabetic to scorn delights and live sugarless days is one of the essentials in the treatment of the disease, and one of the most difficult. Having trained the diabetic to do without these conditions, the estimation of a diet is relatively easy, and to do it by a laborious process of mathematics is quite

unnecessary. Personally, I have a series of charts which vary from a few hundred calories to two thousand eight hundred calories, which, for all ordinary purposes, admirably fill the bill, but there are many other and just as worthy ways of doing the same thing. Probably one of the simplest and most easily understandable is the line ration treatment devised by Lawrence from the method proposed by Graham. Having decided the metabolic requirement, and having got the patient at rest and under observation and sugar-free on that diet for a few days, the next step is to increase the diet gradually by amounts of 200 calories or thereabouts until the patient has sufficient food for his everyday work—thirty to fifty calories per kilogram of body weight, according to the kind of work in which he is employed.

The next question that arises is the treatment of the diabetic with insulin as well as diet. Remember, and never forget, that diet is the fundamental principle in the treatment of all diabetics, and that the understanding of that fundamental principle is the salvation of the individual diabetic, and that insulin, important as it is in the treatment of the disease, is an accessory and not the basic principle in that treatment. Assuming that a patient after trial with a diet of metabolic requirement still shows sugar in the urine, then the question of administering an adequate dose of insulin has to be considered. First of all let me impress upon you that the insulin should be administered at the earliest opportunity by the patient himself. Once the confidence of the patient is established, he can manage this dreadful pin-pricking, and it is important to remember that there are bad hypodermic syringes and bad hypodermic needles, and a patient who is using a hypodermic needle should have a sharp needle as well as a clean one. Once the patient becomes used to the administration of the insulin he finds very little difficulty in treating himself, and really, when all is said and done, the treatment of diabetes devolves very largely on the patient. There is nothing mysterious, nothing alarming, nothing dangerous in the administration of small doses of insulin. The effect on the patient is practically nil. He has no discomfort and no symptoms whatsoever; it is only when large doses of insulin have to be administered that any risk at all is run, and any untoward symptoms are likely to be suffered.

In regard to the actual insulin, we use that made by the Commonwealth Laboratories, and at times we have found that there is an intolerance to that particular insulin and a tolerance to some other kind, but by and large we have practically no trouble at all. We have seen only a few cases of absorption of the subcutaneous fat, and that, curiously enough, occurred in the first few cases that we treated. We have seen no infections to speak of, and the few rashes that we have seen we have regarded as due rather to the preservative than to the action of the insulin itself. For syringes there are many on the market, and for

the patient who is constantly using a syringe it is better to have one which can be kept protected in a case and immersed in methylated spirits. There are several of these on the market, and any one of them can be used. It is merely a question of a very brief education of the patient in the use of the syringe and the cleanliness of it. Incidentally, we teach all our patients to test their urine for sugar, for acetone, and for diacetic acid. Now, as to the amount of insulin to be used. Various formulae have been worked out to find the amount of insulin required for a particular case, but I do not think that any formula is of very much value, and the dosage becomes largely a matter of experience on the part of the physician. We use, as a matter of practice, a minimum amount of insulin for a given case, and we find that our treatment is just about as successful as one would expect it to be.

Finally, there is a way of treating diabetes which does not commend itself to me, and which I do not think would commend itself to the average thinking physician, and that is the administration of large quantities of food with large quantities of insulin. I have tried this only on odd occasions, and the treatment has been justified only in one or two cases. One particularly which I mention was a case in which the patient had an extraordinary diabetophobia. I showed him, by giving him a large diet with large quantities of insulin, that it was a perfectly simple matter to make him grossly fat and correspondingly ungainly. So much for the treatment of diabetes as a routine.

#### Complications.

It is unnecessary, I think, to deal *in extenso* with the various complications which occur in diabetes, except a few which are likely to be met in the course of general medical practice, and which we, of course, meet in our hospital experience. I think it would be expedient to mention just a few matters in dealing with the patient who comes in or who is seen when he is unconscious. There is no need for me to impress upon you the importance of gaining accurate information from the friends of the patient, that is to say, information about previous kidney disease or diabetes or epilepsy or other neurological conditions. You also have to remember that addiction to alcohol or drugs may cloud the issue, and both of these may be found on the patient. You must not forget that injury may cloud the issue, and the smell of alcohol does not necessarily indicate alcoholism. The general examination of the patient includes noting the outward appearance, pallor, cyanosis, the type and rate of breathing, and the presence of blood-stained matter about the mouth. Fracture of the skull in doubtful cases is not always easy to discover, but it is well to look for obvious injury, bleeding from the nose and ears, or the escape of meningeal fluid or hæmorrhage into the conjunctiva. The next thing to remember is whether the patient is paresed or paralysed, noting particularly paralysis of the hemiplegic type. The face will show the

puffing or the blowing out of the paralysed cheek, and there will also be noted the flaccid, paralysed limb, the absence of tendon and abdominal reflexes, and the presence of the Babinski sign. The conjugate deviation of the eyes will be noted, and the signs and shape and reflex of the pupil. The smell of the patient will often show whether alcohol, opium, paraldehyde, chloral or other drugs are implicated, and the breath is typical in acidosis and uræmia. The circulatory system will often give a broad hint as to possibilities, especially the state of the peripheral vessels and the blood pressure; the diastolic blood pressure particularly should always be estimated. The examination of the urine will disclose the presence or absence of sugar, albumin and ketone bodies, and the state of the temperature may be important. The examination of the eye may be important; it will reveal papilloedema or retinitis. Estimation of blood sugar and of blood urea and the findings on lumbar puncture and on cytological examination may be diagnostic. If poisoning be suspected, the contents of the stomach should be collected and sealed.

I shall deal more especially with the differential diagnosis and laboratory investigation of diabetic coma. I have had quite recently under my care, and simultaneously, four patients with diabetic coma: three of them recovered, and I attribute the recovery very largely to the liaison we have between our out-patient diabetic clinic and our laboratory. Without laboratory assistance our handicap would have been very much greater. I should like you to remember that since the introduction of the treatment of diabetes by insulin it is quite possible to get a patient in coma without the clinical and laboratory findings one would expect. It is also possible to have a completely clear urine as well as a normal carbon dioxide combining power two hours after the administration of insulin. This makes it very important to know what treatment the diabetic patient in coma has had just before admission. Coma is the terminal state of the diabetic. The diagnosis of diabetic coma is not usually difficult, but it is of paramount importance to make an immediate and correct diagnosis if treatment is to be successful, since the expectation of life in these cases may be a matter of a few hours only. There is usually a history of influenzal or other infection, or possibly some gastro-intestinal disorder, and the importance of getting a correct history, if at all possible, cannot be over-estimated. The patient usually complains of nausea and vomiting—gastric weakness we will call it—difficulty in breathing, and inability to keep awake before coma sets in. On examination one can usually detect the odour of acetone in the breath—the odour of sanctity, so-called—and there is softening of the eyeballs, Riesenman's sign, which is very characteristic and due to the general body dehydration. The urine contains as a rule large quantities of sugar and ketone bodies. The tests we use in the Brisbane Hospital for these various bodies are the Benedict's test, with which you are

all familiar, Rothera's nitro-prusside test, and Gerhardt's ferric chloride test. The blood sugar is very high, as a rule 0.4 or 0.5, and the carbon dioxide combining power is invariably low.

#### Differential Diagnosis.

Now for the differential diagnosis. In cases of *diabetes mellitus* which are already under treatment, it is very important to be quite certain that a patient who is being treated by insulin is not suffering from an overdose of that substance, and therefore from insulin poisoning or hypoglycæmia. This coma comes about, as you all perfectly well know, by the administration of too large a dose of insulin, or of a large dose without food, and it is quite obvious that another large dose administered for therapeutic reasons might bring about an irreparable catastrophe. The mere appearance of the patient in the two conditions will not differentiate them. The history will, as a rule, clarify the situation. The friends of the patient will be able to state that a large dose of insulin has recently been administered or that the patient has taken his usual dose, which may be a large one, without the prescribed meal, or that some gastric upset has either precluded him from taking his meal or has caused him immediately to reject it. The treatment of hypoglycæmia is much more urgent than the treatment of diabetic coma, and the physician will have to make up his mind quickly as to the situation, and probably will not have to depend on laboratory investigation to make a differential diagnosis. The presence or absence of sugar in the urine will not be convincing, since it is possible that sugar might be present in the urine in the bladder before the insulin was administered, or, as has already been pointed out, the patient might have no sugar in the urine and still have diabetic coma. Patients suffering from hypoglycæmia usually have no sugar in their urine. The onset of the two conditions is quite different. Diabetic coma is usually slow or gradual, with the predominant signs that have been recapitulated. The onset of hypoglycæmia, however, is usually rapid, with a characteristic syndrome. In hypoglycæmia the patient gets restless, nervous, has flushes and perspires; he has a feeling of hunger in the pit of his stomach or even actual abdominal pain, becomes emotional and disorientated, and may develop, as described some years ago, paresis or hemiparesis, or even hemiplegia. We have had recently under our care this patient whose case was reported.

I do not propose to enter into the differential diagnosis between diabetic coma, hypoglycæmia, cerebral hæmorrhage or embolism, or hæmorrhage into the floor of the fourth ventricle, but I should like to say just a few words about uræmia. This condition of uræmia may be very difficult to diagnose from diabetic coma. It is possible, and not uncommon, that you may have both diabetes and nephritis in the same patient. The treatment of these conditions is so opposite that the diagnosis

must be promptly made. The specific gravity of the urine is higher in a diabetic than uræmic coma. The blood urea is usually higher in uræmic coma, but it may be high in both conditions and really is not very helpful. The carbon dioxide combining power is low in both; it is usually lower in diabetic coma than in uræmia. The blood sugar is likely to be higher in diabetic coma. In uræmic cases physical examination will usually reveal more marked arterial degeneration of the cardiac involvement, particularly pericarditis. It is to be remembered that it is possible to have a diabetic die from uræmic coma, and it is just as possible to have a nephritic develop diabetic coma. The smell of the patient is one of the best guides. The diabetic as a rule has not an unpleasant smell, but the uræmic patient has a curious uriferous and loathsome odour, and therapeutically the uræmic patient will not be restored to consciousness by insulin, whereas in most cases a patient with diabetic coma will respond in a few hours as a rule. I need not deal with *encephalitis lethargica* and extreme cerebral arteriosclerosis as possible difficulties, as these conditions would show none of the characteristic findings of diabetic coma.

In regard to the diagnosis of a patient admitted to our care in the hospital, the first thing that is done after the history has been taken and the general examination made, is to catheterize the bladder and examine the urine. The urine is examined for quantity, appearance, specific gravity; and chemical examination is made for sugar, acetone, diacetic acid, albumin and pus. The blood sugar is estimated by Maclean's method, and so far as is practicable the treatment of the patient is controlled from time to time by blood sugar estimations. A very close watch is kept on the patient's urine. If necessary, the bladder is catheterized every hour or two, and every specimen is examined for sugar, acetone and so on. A microscopic examination is also made at the laboratory. Possibly the best and most important test is the estimation of the alkali reserve, or carbon dioxide combining power, and low alkali reserve presages a serious catastrophe.

It is possible to prognosticate in a serious given case whether there is a likelihood of recovery from diabetic coma by a knowledge of the alkali reserve. You will remember that the so-called alkali reserve of the blood and tissues depends upon the available base, that is, sodium or potassium, and to a much smaller extent, ammonia in the blood; and the base is found, first, in combination with proteins, secondly, in the form of bicarbonates, and thirdly, salts, phosphates and chlorides. The presence of these salts prevents even a fairly large amount of acid from making the blood only slightly less alkaline, and in order to bring that about, carbon dioxide must be freely liberated by the lungs.

In diabetic acidosis the added acid combined with the sodium salts of the protein in the plasma and the bicarbonate in the plasma and the carbon



dioxide is released. The expiration is rapidly increased, and the carbon dioxide is ventilated out of the blood by the increased breathing and the hydrogen ion concentration is brought down to its content. There are several methods of estimating the alkali reserve; the one used in the laboratory here, and considered valuable, is Van Slyke's method. In this method the alkali reserve is estimated as sodium bicarbonate; a known quantity of serum or plasma is used, and by the addition of acid the carbon dioxide is extracted and measured. The alkali reserve is calculated by reference to a table, and the actual carbon dioxide content, or carbon dioxide combining power, can be determined. The normal limits of carbon dioxide combining power vary from 53 to 77 cubic centimetres per hundred cubic centimetres of plasma. In a mild acidosis it should be about 44 cubic centimetres per hundred cubic centimetres of plasma. In severe nephritis portending an early determination 34 would be an average figure. In diabetic coma it may be as low as 21. It is possible to estimate the amount of ketosis, but this is not of any practical value. One of the tests may be of some use in very isolated cases, and we have used it perhaps twice in the last ten years, and then as the urine diastase test. This was originally devised by Wohlgemuth as far back as 1909, and his, or some modified, technique is used to this day. The test depends upon the fact that the urine contains the starch-splitting enzyme, and a unit of diastase is given by the number of cubic centimetres to 0.1% of starch solution digested by the urine. The index of normal urine varies between 6 and 30, but in acute pancreatitis the index rises to 100 or more. Chronic pancreatitis does not affect the diastase index.

Now, just briefly, I will give you the instructions which are promulgated in my wards for the treatment of a patient admitted in diabetic coma.

1. The patient is placed in a warm bed with hot water bottles around him and to the feet.
2. An enema is to be given and the rectum thoroughly emptied.
3. The stomach is to be washed out, after which a solution of alkaline sodium phosphates should be given through the tube (30 grains of sodium phosphate).
4. As much fluid as possible in the form of normal saline solution should be given subcutaneously and *per rectum*.
5. In the case of a patient being able to swallow, hot fluid should be given by the mouth (coffee and so on).
6. In the day time, when the services of a pathologist are immediately available, insulin will not be given until after his arrival and until he has had an opportunity of gathering data as to the patient's condition.
7. The dose of insulin shall be given in the urgent cases at night, and in ordinary cases before the pathologist arrives (ten units followed in ten minutes by forty units intravenously).
8. The pathologist will be notified of all cases immediately on arrival, and the director of the laboratory will make arrangements by which the services of a pathologist will be available at any time day or night.
9. After a preliminary dose of insulin has been given, further doses will be given in conjunction with the physician and pathologist on duty on the case.
10. The administration of oxygen by the Haldane apparatus in the ward is to be recommended.

11. The conditions which suggest that coma might occur are as follows: (i) high blood sugar, (ii) ketonuria, (iii) alkali reserve less than 30. The physician should be notified at once.

In addition to the routine treatment of diabetic coma, there is the treatment of desperate cases of diabetic coma by intravenous therapy, as recommended by Lawrence two or three years ago and adopted by us in the Brisbane Hospital. The indications are hunger, unconsciousness, excessive sugar, marked ketone bodies, dehydration, collapse, low circulatory volume, low eye tension, oliguria or anuria. The technique is as follows. A Jubbé transfusion needle (size 12 to 14) and syringe are used; it is not necessary to cut down on a vein. Connect up the transfusion needle with rubber tubing dipping into a jug containing solution. Now, as to the solution, the nature and volume. A 1.2% saline solution is used, of which three to five pints are injected, followed by 7% gum acacia solution, one pint; insulin, adrenalin or digitalin may be added. The volume depends upon dehydration. The object is to reestablish fullness and strength of the pulse; the high tension is the best guide. The rate of injection is one litre in half to three-quarters of an hour. In after-treatment continue the rectal and subcutaneous administration of saline solutions if necessary.

There are many complications of diabetes, some of which have been mentioned in the course of this summary, and I think that possibly to overcome the most serious difficulties in the disease the establishment of the confidence of the patient by his doctor and the creation of an atmosphere of optimism for the future are about as important as anything in the treatment of the case. It is easy to give to any patient the counsel of perfection, but it is difficult often enough to persuade a diabetic what is best for him; and to tell a harassed man that the avoidance of over-work and worry in times such as these is necessary sounds stupid. It is a fact, however that fatigue of any sort is a very important factor. Mental fatigue and financial worry particularly militate against the successful treatment of diabetes, but in most cases in which the patient is adequately trained he manages to forget his worries and even his diabetes. Of the commoner complications of diabetes the one outstanding and important condition is influenza. Any infection is liable to cause trouble and aggravate the condition, but I think influenza is the one condition which the patient ought to be warned against as likely to cause an increase in his symptoms and irritate his pancreas. The patient with a cold or influenza should at once go to bed, and, knowing as we do from experience that an acidosis is possible as a result of or during the course of these diseases, the diet should be reduced, especially as regards fats, and a more liberal carbohydrate diet should be introduced. Injuries are apt to be more serious in the diabetic than in the normal individual, but, surprising to relate, the Great War did not produce the toll of diabetics through shock that one might have anticipated. I think possibly this is due to the fact that

most of the men in the war were in a state of excellent physical training and were receiving a reasonably balanced diet.

We have had in the last twelve months two cases in which the medico-legal aspect of diabetes had to be considered. One patient was a man apparently in perfect health who was knocked down by a motor car and who sustained a fractured leg and subsequently developed diabetes within a few days. The other developed diabetes subsequent to an injury to the spine. Both these patients were not known to be diabetics prior to their traumas, and it is possible, though not easily proved, that they are traumatic diabetics. They have, as a matter of fact, both done well. Gastro-intestinal troubles also are important, and gastro-intestinal upset sometimes ushers in an attack of coma. The treatment of diarrhoea is not always easy, but we find that bismuth, salicylate and opium are quite useful with an appropriate reduction in the food intake. We have had several patients with pneumonia among our diabetics; they have recovered. And we have had several cases of tuberculosis complicating the disease; we have one patient at present in the ward with basal tuberculosis.

We will pass over the question of nephritis in diabetes, as nephritis is a subject dear to the hearts of most of you, but I confess that diabetes and nephritis often are associated and complicate each other to a very difficult extent. Diabetic neuritis is comparatively common, and is probably not a neuritis at all; it is more likely due to an improper diet, to insufficient vitamins or to some endocrine upset. We have recently had one case of pregnancy with diabetes; the patient did well and is still well after the birth of her baby.

#### Diabetic Gangrene.

Now, finally, the most important complication with which we have to deal is diabetic gangrene, so common, as you will have heard from the earlier part of this summary, and so important as to be the commonest complication requiring major surgery, and a common cause of death. We have had in the last five years fifteen patients with gangrene of greater or less severity, seven of whom required surgical operation. The most important thing in the treatment of gangrene is the prevention of it, and we echo Joslin's advice to keep the feet as clean as the face. Diabetic gangrene rarely occurs except in elderly diabetics, and is nearly always brought about by some kind of injury. Blows or abrasions are commonly reported, and it is very important to advise the diabetic to wear properly fitting shoes and to avoid tinkering with corns and callosities. Toe nails should be kept properly pared and properly cleaned; in fact, the feet should be made an object almost of affection.

Since the introduction of insulin gangrene is not nearly so common, and in our experience the gangrene has tended to dissolve. In some cases sloughing and healing have occurred, and in others the gangrene has remained local instead of spreading.

Further than that, when these gangrenous patients actually have to be operated upon, the operation is fraught with very much less risk than it was before the use of insulin. In elderly people, too, when the age and the disease tend to make them lazy, the prescription of adequate exercise should not be forgotten, and the keeping up of the circulation in the extremities is one of the most important factors in preventing gangrene.

Just one word about the pathology of gangrene. It is, as you all know, a very complicated condition, and includes changes in all the coats of the blood vessels, particularly in the larger muscular arteries, for example, the *dorsalis pedis*. The lumen of the vessel may become so small as to be almost occluded and perfectly inefficient. The one thing that I wish to mention, and which Dr. Duhig has called my attention to, is the degeneration which occurs in the intima, and here we find a deposit of fat and of cholesterol crystals, the deposit of fat being quite in accord with the state of lipæmia in a great many diabetics. The deposit of cholesterol is not so easy to explain, but is possibly due to disordered metabolism, particularly of the liver. The other coats of the arteries are also affected to a greater or less extent. There are various tests which have been adopted for the investigation of the circulation. The Matas test is one in which the leg is raised for five minutes, and the leg is bandaged with an elastic bandage from the toes upwards and left in position for five minutes. The bandage is then removed and the femoral artery is compressed. As the collateral circulation is established, a wave of hyperæmia passes down the limb, and this is watched. If the circulation is inefficient, there is a definite level where the hyperæmia ceases, and this is the site of election for amputation.

The Moscowitz test is the same as the foregoing, with the exception that the femoral artery is not compressed and the operation site is the lower border of the hyperæmic area.

The next test is that of Cohen and Stern. It is only of value when there is no œdema. It consists of injection with a fine syringe and needle of 0.2 cubic centimetre of a normal saline solution to produce a wheal. A series of these wheals are made from the base of the great toe every four inches up the foot and leg. The normal time for disappearance of these wheals is sixty minutes, and the correct height for amputation is that at which the wheal remains for an hour.

Now, in regard to operation for gangrene, there are several factors to be considered in making up one's mind, and quite apart from other considerations, to my mind, pain is one that matters as much as anything. Pain in gangrene may be persistent and terrible, so much so that nothing gives relief. The second factor is the rapid spread of the gangrene in spite of treatment. The third is a cellulitis with toxæmia, and the fourth is progressive deterioration of the patient in spite of treatment. It is really astounding how many patients with gangrene improve after the focus has been removed by

amputation. In suitable cases there is an immediate feeling of well being and an improvement in the general condition, and in some cases I have noted a reduction in the amount of insulin used, even to its total abolition.

And, finally, one word about an anæsthetic. Possibly the best anæsthetic is spinal anæsthesia, as that avoids the risk of acidosis with most general anæsthetics. The only risk in spinal anæsthesia is the possibility of a rapid fall in blood pressure. In regard to local anæsthetics, these are mostly to be avoided on account of the risk of local trauma promoted, and of the general anæsthetics gas and oxygen is easily the least risky. The patient should be prepared for any general anæsthetic, if he has a high blood sugar and ketone bodies, by the elimination of those substances from the urine if the matter is not urgent. When the blood sugar is known to be high, a dose of insulin, from twenty units upwards, balanced with glucose, should be given, and this should be continued until the patient is reasonably well. When the patient can be prepared, it is well to keep him on a restricted diet for a day or two days beforehand, and after the operation it is necessary to keep up a carbohydrate diet with as much insulin administered every four hours as is required to keep the urine sugar-free, or with just a trace of sugar. We find that milk without fat, that is, skim milk, and porridge or gruel with an egg or two added are very useful, and a gradual return to the normal diet is then indicated as the patient recovers.

#### SPIDER BITE (ARACHNIDISM): A SURVEY OF ITS OCCURRENCE IN AUSTRALIA, WITH CASE HISTORIES.

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AND

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For nearly a century attention has been drawn by careful observers to the effects of the bites of poisonous spiders. Cases have been described in southern European countries, America, Africa, Australia and New Zealand. Numerous fatalities have been recorded, and even now, apart from references in the "Manuals of Tropical Medicine", detailed descriptions of the effects of the bites of poisonous spiders and the appropriate treatment have not appeared in text books or systems of medicine. In 1926 Emil Bogen, in drawing attention to the large number of cases of spider bite in the United States of America, used the term arachnidism to describe the condition. He made an exhaustive analysis of 150 cases reported in the United States of America and pleaded that arach-

nidism or spider bite poisoning should be accepted as a true clinical entity in the field of general medicine.

In Australia cases of spider bite poisoning, with several fatalities, have been reported from 1863 to the present day, and undoubtedly numerous cases in which recovery has taken place and which have never been reported, have occurred throughout the country. An analysis by the Government Statistician of New South Wales of the deaths from venomous bites from 1927 to December, 1932, reveals the fact that during that period deaths from snake bite totalled ten, whereas deaths from spider bite totalled seven. There was an additional death from spider bite in Sydney in January, 1933. These figures are startling enough, but become more so when it is realized that the most lethal of the spiders, the "funnel-web", *Atrax robustus*, is, as far as we know, confined to a small area of the State.

Three spiders are definitely regarded as harmful to man in Australia, namely, *Atrax robustus* O. P. Cambridge, 1877, *Atrax formidabilis* Rainbow, 1914, and *Latrodectus hasseltii* Thorell, 1870.

The spiders of the genus *Atrax* are included in the sub-order Mygalomorphæ of the order Araneida. The members of this sub-order are characterized by the four lung slits situated on four light reddish areas at the base of the under surface of the abdomen, and leading to the lung books, and by the chelicerae or poison fangs being placed side by side and so articulated that they move up and down.

The spiders of the genus *Latrodectus*, on the other hand, are included in the remaining sub-order of Araneida found in Australia, the Arachnomorphæ. This group includes all the true spiders, and in these, with few exceptions, two lung slits are present in the epigastric furrow towards the base of the abdomen, while tracheæ, as well as lung books, are present. The chelicerae or poison fangs are jointed to move in a pincer-like manner from side to side.

For the guidance of practitioners where poisonous spiders are prevalent, a full description of the effects of the poison and the appropriate treatment is necessary.

#### The Sydney Funnel-Web Spider, *Atrax Robustus*.

The genus *Atrax* includes eight species of spiders occurring in eastern Australia and Tasmania, but toxic bites have been recorded from two only of them, namely, *Atrax robustus* and *Atrax formidabilis*.

*Atrax robustus* (see Figures I and II) is a large black or reddish-brown spider, the male measuring about 24 millimetres in length and the female about 32 millimetres. The cephalothorax is black, shining, and smooth, the abdomen dull brown, while ventrally the body is reddish-brown. The male is easily differentiated from the female by the presence of pointed spurs on the underside of the tibiae of the second pair of legs. The male has relatively longer legs than the female and is rather more

<sup>1</sup> By permission of the Trustees of the Australian Museum.



active. Both sexes are very pugnacious and attack on the slightest provocation. In all those cases of bites in which the spider has been captured, examination has proved it to be of the male sex. In view of the fact that the female is just as aggressive as the male and, moreover, in captivity will attack males placed in the same jar, it is difficult to ascribe a reason for the absence of "bites" from females. With the exception of the case at Carlingford, that of a little girl aged five, and that of the recent case near Taronga Park, of a young woman, the spiders responsible for the poisoning have been captured and sent to the Australian Museum for identification.

*Atrax robustus* is a member of the family Dipluridae, the members of which do not construct lids to their burrows or retreats, but spin, instead, a funnel of silk. The term "trap-door" spider, under which it has appeared in medical literature and in the Press, is erroneous, for, though it is closely related to the true trap-door spiders, none of these lid-building forms have yet been recorded as harmful to man. *Atrax robustus* seems to take advantage of any natural crevice in which to place its silken tube, such as by the side of fence posts, under logs, stones, and in rotten tree stumps. At the entrance of its retreat the silken strands are stretched out to form a funnel (see Figure IV). The vast majority



FIGURE IV.

Showing retreat of *Atrax robustus*. Note the silken strands stretched out to form a funnel.

of the specimens of this spider sent to the Australian Museum have come from the northern shores of Port Jackson. They have been found not only in gardens and the bush, but also inside houses, where some of the occupants have received bites.

#### Effects of Bite.

From 1927 a number of cases of spider bite due to *Atrax robustus* occurred, with four deaths and sundry recoveries. Those who recovered were at first desperately ill, and a detailed account of one

of these cases is given below. Of the patients who died, one was a baby boy, the others were females, aged five, twenty-five, and forty-seven years. The death of the elder woman was fully reported in this journal by Dr. R. N. Beazley in 1930.

The younger woman died in January of this year. The following description of the case is compiled from the notes made by Dr. Douglas Anderson, resident medical officer.

She was admitted to the Royal North Shore Hospital with the history that when sitting on the grass in the evening in the vicinity of Taronga Park, she experienced a sharp sting on the buttock. She jumped up frantically, endeavouring to brush it away, but the sharp pain persisted. Within ten minutes she turned pale, felt weak and ill, and commenced to perspire freely. She was treated by Dr. Balls and sent to hospital. On admission she was found to be very collapsed, pale and drenched with perspiration. There was marked dyspnoea with inspiratory stridor. There was no oedema and no local reaction at the seat of the bite. There was frothy fluid on her lips and every few minutes she had an attack of retching. Her mentality was unimpaired, but she appeared to be frightened. Her temperature on admission was 35.6° C. (96° F.), but rose in six hours to 38.0° C. (100.4° F.). Her pulse was scarcely perceptible and its rate was 150 per minute; her respirations were 50 per minute. On account of the loud inspiratory stridor the heart sounds could not be counted. Analgesia of the whole body was observed and lasted for four hours after the bite, but sensation of touch remained. The pupils were small and did not react to light. The tendon reflexes were sluggish. In spite of treatment, the great collapse and intoxication persisted, but the laryngo-spasm was relieved by morphine and atropine. There was no paralysis at any time, but fibrillary twitching of the right risorius muscle was observed. She gradually became cyanosed in spite of the administration of oxygen, and died suddenly from heart failure thirteen hours after being bitten.

A *post mortem* examination by Dr. A. Palmer revealed acute pulmonary oedema with petechial hemorrhages on the pleura. The trachea and bronchi were filled with frothy fluid. He noted the blood was very dark.

The course of the case and the *post mortem* findings are practically identical with those described in Dr. Beazley's patient, who died in the Royal North Shore Hospital.

The locality where the girl was bitten was searched shortly afterwards, and two female specimens of *Atrax robustus* were captured not far from the spot where she had been sitting.

A very interesting and instructive case was that of a boy, W., aged seven years, who was bitten on the right hand by a male *Atrax robustus*.

He cried out with pain when he was bitten, and his mother immediately sucked the wound and put on a tourniquet. He was seen less than half an hour later by Dr. Clough and he was then frothing at the mouth with apparently obstructed respiration. Dr. Clough incised the site of the bite and sent him to hospital.

On admission at 8 p.m. there was no oedema at the site of the bite, but the child had all the signs of an acute anaphylactic shock. There were large urticarial wheals on his chest and back, he was bringing up frothy material from the lungs and stomach, and there were signs of acute lung oedema. His pulse was soft and the rate 130 per minute. There was acute respiratory distress, with well marked inspiratory stridor. He was very collapsed and was retching incessantly. The pain of the bite had apparently quite subsided. He was unable to recognize his mother on account of apparent paralysis of accommodation. He was unable to open his mouth or to swallow, and had an apparent weakness of the right side of the face. He was very restless and anxious. He was given morphine

and atropine along with pituitrin, and appeared to be relieved. He was sent to the ward, but within an hour his laryngeal spasm had returned. At 10 p.m. he was still vomiting, his breathing was very distressed, his pulse was soft, and its rate 130 per minute, and his temperature was 35.6° C. (96° F.). He developed rigidity of the abdomen, with acute priapism, and was unable to pass urine. At this stage his knee jerks were absent, as were his abdominal reflexes. He had a well marked lateral nystagmus, his pupils reacted to light, and all his muscles appeared tender to touch. His skin assumed a waxy pallor. He was given intravenous injections of normal saline solution with pituitrin, and later the morphine and atropine were repeated. His condition appeared to improve, but continued to be extremely restless, with increasing cyanosis of the lips. He was given oxygen without improvement and was then given 5% "Carbogen" continually for about twelve hours. He continued throughout the night with grunting and fits of extreme restlessness. He gradually became more cyanosed and lapsed into unconsciousness with an almost imperceptible pulse. Venesection was performed and about 200 cubic centimetres of very black blood were removed. The blood clotted immediately it was shed. He rallied and within half an hour was able to drink, and from then on made a rapid and amazing recovery. Dr. J. Hulme, resident medical officer, assisted in treating this patient.

Another recovery from the bite of *Atrax robustus* was that of a male, aged forty-two years. He was bitten on the sole of the foot in a dark room opening on to his garden. His illness, which was very severe, lasted three days, and he expressed the opinion that anyone under the age of fifteen years would have little hope of recovery from the bite. His case was reported by Musgrave (1927).

As far as can be ascertained, there have been only four deaths in the Sydney district from poisoning by *Atrax robustus*. Particulars about these cases are set out in Table I.

TABLE I.  
Deaths from *Atrax Robustus* in the Sydney District.

Sex.	Age.	Time Elapsing Before Death.
Male	2 years (approx.)	1½ hours
Female	5 years	1½ hours
Female	47 years	11 hours
Female	26 years	13 hours

#### The North Coast Funnel-Web Spider, *Atrax Formidabilis*.

*Atrax formidabilis* is a larger species than the preceding, and is known only from males. In appearance these resemble the males of *Atrax robustus*, but are easily determined by the rounded spurs of the tibiae of the second pair of legs, those of *Atrax robustus* being pointed. The type was recorded from the Richmond River, and only a few specimens have been since secured. One of these was responsible for a case of poisoning at Wauchope, North Coast, New South Wales, being reported by Dr. W. Begg, of that town, to the Board of Health, Sydney, in 1926, and recorded by Musgrave (1927).

#### Effects of Bite.

Dr. Begg has forwarded the following letter describing the illness.

Dear Dr. Ingram,

I have pleasure in sending you the following additional particulars in reference to the case of "spider-bite", *Atrax formidabilis*, reported by me in 1926 from Wauchope to the Board of Health, Sydney.

As stated by me in my letter which accompanied the spider to the department, the man was desperately ill. He was delirious and complained of people spraying him with something. Saliva and other secretions were running so profusely from his mouth that his head had to be kept in a dependent position to facilitate their exit. He was shivering and bathed in a profuse perspiration. A military overcoat he was wearing, when lifted, felt as if it had been soaking for a long time in water. He was pale, had a very soft pulse, and could hardly breathe on account of the profuse bronchial secretion. His surface veins were distended with dark blood. He was put to bed and surrounded by hot water bottles and hot packs. The bites were well incised and encouraged to bleed freely. Morphine, atropine and strychnine were given hypodermically, and saline was given *per rectum*. An improvement in his condition was soon evident, and the bites were later scarified with permanganate of potash.

He was very weak but made an uninterrupted recovery and was able to leave the hospital in a few days.

The patient was a strong and healthy sleeper-cutter, and was so desperately ill that I was satisfied, at the time of the occurrence, if a child had received the same amount of poison the child would have died.

#### The Red-Back Spider, *Latrodectus Hasseltii*.

The "red-back", "red-spot", or "jockey spider", (see Figure III), is a member of a genus distributed throughout the tropical and subtropical regions of the world. The Californian species, *Latrodectus mactans*, known popularly as the "black widow" or "hour glass" spider, has formed the subject of interesting papers by Bogen, and Bogen and Berman, and has habits similar to those of *Latrodectus hasseltii*.

*Latrodectus hasseltii* attains a length of about half an inch, or 12.5 millimetres, the abdomen being about the size of a pea. The colour of the body is black with a red stripe situated towards the centre of the upper part of the abdomen and tapering posteriorly. In front of this again may be smaller orange or red lateral markings. These markings tend to vary, being perhaps more pronounced in the smaller examples. Some of the writers cited in the appended bibliography refer to yellow markings, but red seems to be the prevailing colour. The legs measure about five centimetres (an inch) in length. It is widely distributed throughout Australia, and ranges from Eastern Arabia through Indo-Malaya to the Pacific Islands and New Zealand.

The spider builds its web in dark corners, in old and empty tins, watering cans, flower pots, or among loose rubbish, it occurs also under stones and rock shelters, while a favourite haunt is under the seats of closets in country districts, where the dry earth closet is in vogue.

#### Effects of Bite.

In an analysis of fifteen patients admitted to the Los Angeles General Hospital, Bogen and Berman stated that twelve were bitten on the genitals, two on the back, and one on the abdomen. The bites, therefore, mostly occurred in outdoor closets.

In the medical literature of Australia there are references to 98 cases, although only 56 of these are described. Some of the writers also state that each year they see in their practice a number of cases, so that it is impossible to estimate the number of actual bites from the "red-back" spider in Australia.

With regard to the site of the bite, one observer states that he sees six cases per year, "mostly bitten on the genitals", and another that he has had 30 cases in his practice, 80% of the patients being bitten on the genitals.

An analysis of the actual recorded sites shows that:

64% were bitten on the genitals.  
8% were bitten on the hand.  
8% were bitten on the arm.  
5% were bitten on the foot.  
5% were bitten on the leg.  
5% were bitten on the thigh.  
5% were bitten on the head.

The majority were therefore bitten while using outdoor closets, across the seats of which the spiders had spun their webs.

Among the 98 cases recorded there are records of six deaths, and an additional death is referred to as having been due to malignant oedema following the bite.

An analysis of the deaths reveals the information that in some cases a considerable period elapsed before death. In one case the bacillus of malignant oedema was recovered from the local lesion, and when death had occurred late it was probably due to secondary infection.

Bogen quotes cases, confirmed by necropsy and bacteriological examinations, of tetanus, anthrax, erysipelas, cellulitis, and septicæmia, following the bite of the "black widow" spider. When one considers its natural habitat, one is not surprised, but this feature must be borne in mind in treatment. The deaths recorded in Australia from the "red-back" spider are set out in Table II.

TABLE II.  
Deaths from "Red-Back" Spider in Australia.

Sex.	Age.	Time Elapsing Before Death.
Male	3 months	6 hours
Male	3 years	36 hours
Male	17 years	3 days
Male	Adult	7 days
Male	Adult	14 days
Female	Adult	30 days

There is an additional death classified as malignant oedema following spider bite. This makes seven deaths, but the mortality rate cannot be estimated, as so many of the cases are not recorded, but presumably it is not high. The cases vary in severity, due perhaps to individual susceptibility, or the condition of the spider, but a typical case is recorded below.

A male, aged forty years, was sitting on an outdoor closet when he felt a sharp sting on the scrotum. About ten minutes later he began to experience severe pain in the testicles, although there was no obvious swelling. The pain increased in intensity, radiating down the thighs and up to the abdomen and thorax. When seen by his

doctor he was in acute agony, which was not relieved by an injection of morphine. The abdomen was rigid. He vomited occasionally, was greatly collapsed, and covered with perspiration. The pain extended into the small joints of the hands and feet. He was extremely restless, and his temperature, which was subnormal at first, rose to 38.9° C. (102° F.) in twelve hours. His pulse was 100, full and bounding. His pupils were contracted. Morphine was repeated and the acute pain began to subside. Twenty-four hours later he was much easier and the severe pains did not return, although for over a week he suffered from sleeplessness and pains in the feet and legs.

Very few patients bitten by the "red-back" spider have been admitted to the large general hospitals. Two only have been admitted to the Royal North Shore Hospital since 1926, and both recovered. As most of the patients in country districts have been treated in their own homes, the case records are not very full, but they agree with the observations made at the Los Angeles General Hospital, where the symptoms due to "black widow" spider bite have been analysed by Bogen. In his series pain was the chief symptom in every case, and was described as severe, cramping, throbbing, sharp, dull and aching. It was located in the legs in eleven cases, in the abdomen in nine, in the chest, back, arms, and penis in five, in the groin in three, and all over in four.

In Table III is an analysis of the symptoms as analysed by Bogen.

TABLE III.

Number of Cases.	Symptoms and Signs.
15	Pain
12	Rigid abdomen
7	Perspiration
7	Restlessness
7	Reflexes over active
7	Vomiting
6	Constipation
5	Cyanosis
4	Nausea
4	Tremors and twitching
3	Difficulty in breathing
2	Dizziness
2	Chills
2	Urinary retention
2	Incoordination
2	Oedema of face and legs
2	Dilated pupils
1	Hiccup
1	Thirst and cough
1	Pupils contracted
1	Priapism

The rigid abdomen *et cetera* led to a diagnosis of ruptured viscus, renal colic, or food poisoning until the condition was recognized as a clinical entity. A leucocytosis was present in every case and also slight hypertension. Eight patients had a subnormal temperature on admission, but in nearly all cases a mild fever developed during their hospital stay.

The poison of the "black widow" or "hour-glass" spider was known to the Red Indians, who used it to anoint their arrows. Experiments on the venom of the Australian "red-back" have been carried out by Kellaway, who found it extremely toxic to laboratory animals. No attempt was made to make an antivenene.

#### Nature of the Venom.

There has been a good deal of controversy regarding the toxicity of spider venom. In the hands



of some workers the harmful effects of spider bites on animals, as claimed by others, have not been confirmed. Toxic spider bite is, however, a seasonal disease of late summer and early autumn, and it is possible that the degree of toxicity is associated with a sexual cycle, as in the platypus, where the poison glands enlarge enormously during the breeding season.

Isolated cases have also been reported of toxic bites from species regarded as harmless. These cases may have occurred in very susceptible individuals.

Although some observers have stated that the bite of *Latrodectus* is harmless, the experience of a large number of clinicians, and the experimental evidence produced by Kobert, Sachs, and Kellaway, leave no doubt about the poisonous properties of the spider venom.

It is now agreed that the chief constituent of the venom is a neurotoxin, but a hæmolysin has also been described. Castellani and Chalmers also state that it contains a substance which increases the coagulability of the blood. It is doubtful whether this is so, and the undoubted increased coagulability can be attributed to the extreme dehydration which occurs.

Kellaway found that the action of extracts of the head and the body of *Latrodectus hasseltii* acted differently. Extracts of the heads, like unadulterated venom, caused death in the guinea-pig from bronchial constriction. Those of the bodies appeared to act on the heart, causing rapid failure. Observations on the clotting times of animals dying, following the bite of the spider, did not support the view that the venom has any effect at all on the coagulation of the blood. Extracts of the head were devoid of any hæmolytic power, while extracts of the bodies, as is the case with other spiders of this genus, were found to have a powerful hæmolytic action.

This confirms the work of Kobert and Sachs.

No work has yet been published on the venom of *Atrax robustus*.

#### General Commentary.

The effects of the venom of the two poisonous Australian spiders are similar in many respects. There is rarely any local œdema, and then only probably with septic bites from the "red-back". The neurotoxic action with collapse is much greater in poisoning by the "funnel-web", all the persons bitten by this spider having been desperately ill.

Except at the time of the actual bite, pain was never complained of by the "funnel-web" victims, while it occurred without exception in those bitten by the "red-back", and was in nearly every case described as very severe and resistant to sedatives. Thereafter the symptoms tabulated were common to both species.

It is extremely fortunate that *Atrax robustus* is confined to a small area of the State, and that it appears only at night, when the chances of human contact are remote. It has been found mostly in an area where the population has begun recently

to spread rapidly, and must be guarded against. There is need for investigation of its venom and general habits.

#### Treatment.

Where the bite has occurred on the extremities the immediate treatment must be the same as for snake bite. A tourniquet must be put on, the site of the bite incised, and potassium permanganate applied. If it is practicable to inject an oxidizing agent around the bite, Dakin's solution and its variants would be preferable to permanganate of potash. The tourniquet should be left on for half an hour and fractional doses of the venom admitted to the circulation until immunity is acquired. If signs of collapse appear, reapply the tourniquet and treat the patient. Often, however, especially with bites from the "red-back" spider, it is impossible to apply a tourniquet or scarify the wound. The bite of *Latrodectus* may not hurt much, and it is only after an interval, varying from a few minutes to ten hours, but in the average two hours, that symptoms appear. The victim may not remember until after his illness that he felt a sting while at stool. In these cases it is too late to deal with the local lesion, except to try to combat the development of septic complications. Ichthyol or iodine applied locally will best serve this purpose.

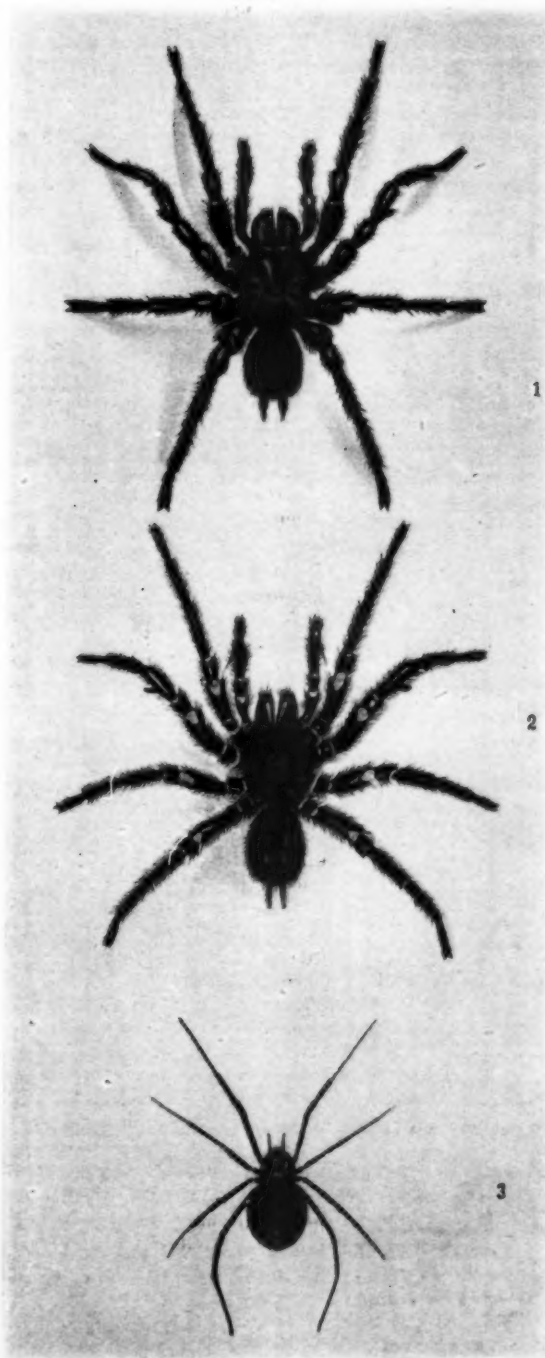
The best method of treating the general effects of the venom is by the use of convalescent serum. At the Los Angeles General Hospital blood is removed from all patients who recover from poisonous spider bite, and the serum is separated and kept in ice for use in succeeding cases.

It was found that relief was felt within a few hours after the injection of the serum, and comparative ease was afforded in a much shorter time than would have been expected. The intermuscular injection of 20 cubic centimetres of whole blood to a victim from a patient who has recovered has given relief. The results, according to Bogen and Berman, though not absolutely conclusive, are sufficiently encouraging to warrant the continuation of the use of this treatment.

Where serum is not available the treatment must be by drugs and therapeutic measures. Morphine and atropine are indicated in all cases. They will help to combat the pain in "red-back" poisoning; this is good treatment for the anaphylactic manifestations in "funnel-web" spider poisoning. Morphine and atropine allay the fear and ease the laryngeal spasm which is so distressing. They should be given along with adrenaline or pituitrin to help to combat the shock.

In consequence of the constant vomiting and profuse perspiration which occur, the patient becomes extremely dehydrated. This causes great embarrassment to the heart, with resulting cyanosis, and if not combated will greatly accentuate the tendency to heart failure. Therefore, give saline solution *per rectum* or intravenously, and if the patient is in *extremis* do venesection to relieve the right side of the heart.

ILLUSTRATIONS TO THE ARTICLE BY DR. W. WILSON INGRAM AND MR. ANTHONY MUSGRAVE.



1  
FIGURE I.  
*Atrax robustus*, male, dorsal aspect.  
(Natural size.)

2  
FIGURE II.  
*Atrax robustus*, male, ventral aspect.  
(Natural size.) Shows biting fangs.

3  
FIGURE III.  
*Latrodectus hasseltii*, female.  
(Natural size.)





Every case, especially of poisoning by *Atrax*, requires constant attention and symptoms will have to be treated as they appear. It may be necessary to catheterize the bladder, and 5% carbon dioxide in oxygen will ease the respiratory distress.

However hopeless a case looks, it will pay to persist with fluids and stimulants; for the boy W. was unconscious and pulseless, and yet a few days later was running about.

#### Acknowledgement.

We wish to express our thanks to the Council of the Research Institute of the Royal North Shore Hospital and to the Trustees of the Australian Museum for their help in connexion with this work and to Miss E. A. King for the coloured drawing.

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#### ELECTROSURGERY OF TONSILS: SOME NEW TECHNIQUES.

By A. J. CAHILL, M.B., Ch.B. (Melbourne),  
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As the question of the diathermic removal of tonsils has recently been reopened in *THE MEDICAL JOURNAL OF AUSTRALIA*, I should like to bring under the notice of my colleagues, and particularly my fellow laryngologists, some new methods of removing tonsils electrosurgically, which are given prominence in a new and outstanding book entitled "Electrosurgery", written by Howard Kelly and Grant Ward, and recently published by the W. B. Saunders Company, of Philadelphia and London. This stimulating and beautifully illustrated book ushers in a new era of "bloodless" surgery and opens up a vista destined in no small measure to replace scalpel, ligature, and hand contacts with wounds, as well as notably to pare down the number of those listed as "inoperables" by skilled surgeons. It includes chapters on the skin, oral cavity, otolaryngology, thyroid, thorax, breast, gynaecology, urology, and the central nervous system, and gives a complete presentation of every point of value in electrosurgery, reflecting not only the views and practice of the authors, but the ideas of those other leaders in this field, both in America and Europe.

In the chapter on the electrosurgical removal of tonsils pride of place is given to the three following methods:

1. Dillinger's technique, which I described in *THE MEDICAL JOURNAL OF AUSTRALIA* on June 7, 1930, and which I have used in my special practice with complete satisfaction during the past four years. This is a method of electrocoagulation with the bipolar current by means of an insulated needle electrode.

2. W. Wallace Walker's technique, in which he combines a limited dissection with removal of the tonsil by means of an electrotonsillar snare.

3. F. Peter Herman's technique of removing the tonsils bloodlessly with a unique electroenucleating tonsillotome, limiting the whole trajectory of the current to the tonsil itself.

Gregg A. Dillinger, an ardent supporter of the diathermic removal of tonsils, reports five hundred electrocoagulations of tonsils with most satisfactory results, declaring that "the method is absolutely safe, free from all serious complications, and, when properly performed, is perfect in its results". With his method the diathermy machine is first short-circuited and then set for a fixed current of 2,500 milliamperes; the inactive electrode, made of a piece of flexible block tin, measuring ten inches by six inches, is placed behind the patient's shoulders, or, better still, bound round the forearm with a rubber bandage, and one or both tonsils are coagulated at each sitting, with intervals of ten days between each séance. Sufficient anaesthesia is secured by merely painting the tonsils, pillars of the fauces, and base of the tongue with a 10% solution of cocaine and adrenaline at intervals of three minutes for three applications, and the treatment is usually divided into four to six sittings, so that patients can be treated in the doctor's surgery and continue their regular activities without missing a meal or losing a single day from their employment. Three needles fitting the same handle should be available—one straight, one bent for a quarter of an inch at the tip at an angle of 30°, and a third one bent like a small hook at the tip. A "Bakelite" tongue depressor and a "Bakelite" tonsil pillar retractor should be used; the throat should be well illuminated with a "Speclite" or other electric headlight. If care be taken when coagulating the tonsil, to keep the point of the needle at least one-eighth of an inch away from each tonsil pillar, there will be no pain or oedema, or any uncomfortable reaction after each treatment.

W. Wallace Walker reports three hundred cases done with an insulated Tyding's snare with excellent results. The anaesthesia is either local or general. With ether the patient exhales a few times before the current is applied to eliminate the chance of an accident. A sharp dissection releases the mucous membrane anterior to the tonsils, over the superior *marginio tonsillaris* and down the posterior pillar; this frees the tonsil, which is then drawn well out with a vulsellum into the snare. A flexible loop, such as an insulated Tyding's loop, is better adapted to the tonsillar irregularities than the rigid type. With the mucous membrane detached the snare is slipped over the handle of the vulsellum, which draws the tonsil out with a strong traction and dislodges it as far as possible from its bed towards the mid-line. With the loop slipped beneath the pillars and the loose end of the wire over the upper pole and the base below the lingual tonsil, the loop is shortened as the current is applied, the tonsil being thus brought away and a clean, dry

fossa being left; the fossa is covered by a thin grey film of coagulation. Occasionally a little bleeding point is seen, especially in scar tissue, which is caught with a haemostat insulated with rubber tubing and coagulated, or, simpler still, the bleeding is checked by the direct application of a small ball or button electrode.

In but six of Walker's large group of cases was there any post-operative bleeding, and in all of these the lingual tonsils had been removed by direct coagulation with a needle electrode after the enucleation of the faucial tonsils with the snare. Bleeding was due to coagulation on the tongue. Four of the six patients seen after two weeks had noted a little blood-stained sputum after taking solid food; the remaining two reported slight oozing from the granulated lingual tonsil area, easily controlled by styptics.

This type of tonsillectomy commends itself by the negligible post-operative pain. For the sake of comparison, Walker varied his technique on the two sides. In a number of adult cases he removed one tonsil by the usual knife dissection and the other by the electrical snare; the patient invariably complained of more pain on the side of the dissection. To determine whether the current or the snare eliminated pain, another group was treated by using the snare without the current on one side and with the current on the other; without exception there was complaint of more pain where no current was used. It thus became evident that the thin film of coagulation benumbs and protects the nerve endings until reorganization takes place, the endings in the film being coagulated and insensitive. Absence of swelling and of oedema is also notable.

F. Peter Herman has devised a most ingenious electroenucleating tonsillotome limiting the whole trajectory of the current to the tonsil itself, in contrast to Walker's technique, in which the current traverses the patient's body. The Herman instrument is of the fenestrum type, suitably insulated for the two electrodes located in the active snare wire and the inactive seizing forceps. The placing of the grip distal to the loop engaged under the tonsil confines the current to the organ itself. The snare is first applied to the tonsil in the usual way, and, after it has been drawn taut, the grip forceps is plunged into the protruded body of the tonsil by a simple movement of the middle finger. The current is then turned on and the tightened snare follows the line of cleavage behind. As the tonsil comes away, coagulation takes place from the current between the snare and the seizing forceps, leaving a bloodless area.

Submerged fibrotic tonsils are not adapted to a rigid fixed instrument. For this type Arthur Nilsson uses a dislocator, consisting of a thin metal loop properly supported to stand considerable pressure in breaking down the fibrous bands while lifting the submerged organ from its bed, when it becomes quite simple to reengage the tonsil in the electrical tonsillotome.

## Post-Operative Treatment.

The care of patients following electrosurgical tonsillectomy is simple, with the objective of keeping the throat clean and repressing any swelling. Should there be any marked reaction in the first twenty-four hours, ice given by mouth helps to control it, or a spray of a solution of adrenaline one in 3,000. Any antiseptic mouth wash, such as "Listerine" or "Glycothymoline", can be ordered as an adjuvant, but the coagulum should be left severely alone. Topical applications are contraindicated as likely to cause a premature separation before vascular organization takes place. The coagulum separates in from ten to fourteen days, leaving a clean granulating surface, which epithelializes promptly.

The techniques evolved by Walker and Herman represent an interesting compromise between the slower, but very efficient, method of Dillinger and ordinary surgical tonsillectomy, either by the method of Sluder, or by dissection, or by dissection combined with a snare. They should make a strong appeal to those laryngologists who are at present somewhat critical of the diathermic removal of tonsils and are reluctant to abandon their present surgical technique for the much safer method of removing tonsils, painlessly and bloodlessly, by electrosurgery.

Personally, I believe that electrosurgery has a great future. It is already a valuable and indispensable aid to classic surgery, and it will continue to replace the ordinary scalpel in certain fields of surgery. There is at present no ideal method for the removal of tonsils under all circumstances. The combination of surgery and electrosurgery is a means of approaching this ideal. Every surgeon should be equipped to use the method best suited to the conditions at hand, and he should not be limited by lack of knowledge, ability, equipment or by prejudice.

## Reports of Cases.

## A CASE OF FULL TERM EXTRAUTERINE PREGNANCY.

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THE following case is of interest on account of its rarity, the absence of a gestation sac, the method of dealing with the placenta, and the mistakes made in the diagnosis.

## Clinical History.

L.J., aged thirty-four years, had had five full term children. The children ranged in age from seventeen years to nine years. Since her last child was born, the patient had had two miscarriages, one four years previously at two and a half months, and the second two years previously at four and a half months.

Her last menstrual period commenced on December 18, 1927, and there was no disturbance until the following

February, when she had slight abdominal pain, slight bleeding *per vaginam*, and she fainted. This occurred on four occasions, the last time being in April. She was first seen at the Women's Hospital on April 26 and was admitted for a fortnight. She was examined under an anesthetic, and the condition was considered to be a retroverted gravid uterus with what was thought likely to be a fibroid on the left side, and later, spontaneous correction of retroversion. She was then discharged to her home in the country. After five months' time, during which she suffered constant abdominal pain and had acute pain on any movement of the child, she returned to the hospital on September 21, 1928, and was seen in the antenatal department. Difficulty in palpation was encountered, probably on account of her adiposity, and a tentative diagnosis of transverse presentation was verified by X ray examination. She was therefore admitted to the antenatal ward on September 27, 1928, and, under a general anesthetic, the transverse lie was converted into a longitudinal one, with the head towards the pelvis. As she was at full term, and to avoid a recurrence of the malpresentation, it was decided to try to bring her into labour by medicinal stimulation, so, on September 29, 1928, she was given castor oil, quinine, and four doses of pituitrin, each of 0.25 cubic centimetre. This produced only slight bleeding *per vaginam*, and the medicinal stimulation was repeated on the following day, but, instead of four doses of pituitrin, six were given, the last one being injected at 5 p.m. At 7 p.m. bleeding *per vaginam* increased and continued, the report being that she was losing large clots *per vaginam*, that the os was the size of a two shilling piece, that the cervix was not taken up. Clots were felt, but no placental margin. A tight abdominal binder was put on. I saw her, for the first time, at 3 a.m. the following morning. At that time she was still bleeding vaginally, the cervix very easily admitted two fingers, which could be made to pass backwards a short distance, but no placental edge could be found. There was, however, a firm layer, about 1.5 centimetres thick, between the examining finger and the head of the child, and during the examination the bleeding became more profuse. For these reasons this layer was mistaken for the placenta, and a diagnosis of *placenta praevia* was made. Braxton Hicks's version was decided upon, and owing to the inability to find the edge of the placenta, it was determined to perforate through it. This was found to be impossible with the finger, so a clamp forceps was used to make the opening. The increased resistance experienced and the character of the edges of this opening on examination at once drew attention to the true condition. The uterus was comparatively small and was retroverted, and the clamp had been made to pass through its anterior or upper surface while the child was in the abdominal cavity. An immediate laparotomy was performed, and a living male child, weighing 2.8 kilograms (six and a half pounds) was found lying free amongst the intestines. There was no sign of either amnion or chorion, but here and there were small loose pieces of a cheesy material, which may have been lymph, *vernix caseosa*, or the remnants of the membranes. The child having been extracted, the problem of dealing with the placenta arose. This, surrounded by adhesions, was situated in the right iliac fossa, being attached to the right broad ligament and extending upwards over the pelvic brim, on to the caecum. Of the three methods, marsupialization was impossible, on account of the absence of a gestation sac; removal was deemed to be too risky, on account of its situation, so it was decided to leave it *in situ*, after having tied off the cord as close to it as possible. The uterine perforation was repaired and the abdomen was closed. The patient made an uninterrupted recovery without morbidity (British Medical Association standard), but, unfortunately, the child died in twenty-four hours from *asphyxia neonatorum*. The patient was examined six months later, when the uterus was found to be slightly enlarged and in a retroverted position. There was an indefinite mass extending in front of the uterus, up as far as midway between the pubis and the umbilicus. The patient suffered no disability, and a year later I learned that she was still in excellent health.



## Comment.

It is hard to understand how the true condition was not discovered earlier than it was, but the rarity of a progressive extrauterine pregnancy was apparently the explanation.

The effect of the administration of castor oil, quinine and pituitrin was interesting. It almost certainly produced, and on the second occasion increased, the hæmorrhage from the uterus.

The absence of any sort of gestation sac, especially with a living child, is remarkable, and I have been unable to find a similar condition reported. Usually the gestation sac consists of the fetal membranes, together with lymph deposited on their surface. This sac then becomes closely adherent to the viscera and to the abdominal wall. Leaving the placenta *in situ* was not accompanied by any bad result. At the operation it was considered preferable to any attempt at removal, and even had it become infected, a localized abscess would have resulted, which could have been opened and drained later.

## Reviews.

## THE FUTURE OF THE MEDICAL PROFESSION.

DURING the last four years Sir Arthur Newsholme, who was for nineteen years Medical Officer of Health of Brighton (England) and later Principal Medical Officer of Health of the Local Government Board (England), has been working under the aegis of the Milbank Memorial Fund on a detailed investigation of public health activities in various countries of Europe. Three large volumes—"International Studies of the Relation Between the Private and the Official Practice of Medicine"—have been published. The book now being reviewed, "Medicine and the State", by Sir Arthur Newsholme, is independent of these three preceding volumes, although its conclusions are based chiefly on the facts collected and on an analysis of these volumes.

In a foreword Professor William Welch states that readers will be impressed with Sir Arthur Newsholme's command not only of the problems of public health, but also of those of medicine in general, of society, and of government. The scope of the studies and the conclusions of Sir Arthur Newsholme are wide indeed. The whole maze of medical services, curative and preventive, is diligently traversed. Consideration is given not only to medical branches of public health work in relation to the private practitioner, but also to private, insurance, and hospital practice.

Sir Arthur Newsholme reveals an extremely clear understanding of the difficulties incidental to modern medical practice, and the conclusions he arrives at are very suggestive in helping towards a solution of the problems. He states in his introduction that the investigation was "based on the assumption that in future practice the blundering experiments and erroneous procedures could best be avoided when one knows what others have done and what has been the outcome of their practice". He has "endeavoured to make the investigation dynamic and to indicate the lines of evolution, as well as to describe existent conditions." He begins with the thesis that the health of every individual is a social concern and responsibility, and that medical care in its widest sense for every individual is an essential condition of maximum efficiency and happiness in a civilized community. He shows that the prime difficulty arises from the increasing accuracy and complexity of medical science. Vastly more can now be done to treat disease, to prevent its later consequences, and to prevent its recurrence, than has been possible in the past.

The problems relating to hospital policy and private medical practice are carefully reviewed, and the need for cooperative relationship between hospital staffs and private practitioners is emphasized. There should, he considers,

be a frank acceptance of the principle of payment of the honorary members of hospital staffs. Hospitals have changed their characters, and some payment is now required from a majority of patients. In larger hospitals a closed staff appears to be the only system practicable; in smaller hospitals it may be possible to arrange for private doctors to attend their own patients.

Tuberculosis and venereal diseases are fully and frankly discussed from the public health aspect. For the better control of tuberculosis, proper supervision of home conditions is considered essential: "In official tuberculosis work the family is always regarded as the unit, and it has always been officially held that the treatment of a tuberculous patient can only be successfully undertaken with a knowledge of his economic and other social circumstances."

For the family doctor Sir Arthur Newsholme has a number of good words to say. Whatever new systems are introduced, the competent, conscientious family medical practitioner will, he thinks, continue to be an essential and, indeed, the chief factor in efforts for securing improved health for a community. He shows, however, that adequate medical care for a large proportion of the total number of sick persons requires organization of measures and of institutions beyond the power of the individual private practitioner to provide, so great is the demand today for pathological, radiological and other specialist services.

This small book provides a very valuable summary of the development in public and private medical practice, and, although the subject matter has been compressed to tablet dimensions, there is no lack of clarity. The obstacles to progress are discussed, and ways of overcoming them are suggested. For all interested in the advance of medicine, Sir Arthur Newsholme has done a great service. To the practising profession the book's importance lies in the plans suggested for future action.

The British Medical Association in England is alert in these matters, and in 1930 proposals were formulated for a general medical service for the nation. It was stated as "a fundamental principle . . . that a satisfactory system of medical service must be directed to the preventing of disease, no less than to the relieving of individual sufferers". There is, in fact, no real line of demarcation between preventive and curative branches of professional work. To heal the individual sufferer, to enable him to resume his place in society, and to assist him to avoid recurrences of his trouble, these surely are our aims, and in this way all efficient clinical work is really an important part of preventive medicine.

These are troublous times. The whole weary world is harassed with its problems: the small difficulties of organization and government in towns and districts, the greater difficulties of national and international range, difficulties of varying importance, yet all importunate. Knowledge has grown apace. Facts we have in abundance, so active has science become. Our great lack is in not knowing how to apply the facts, to use them to the best advantage in our daily lives. It is social science that lags. The problems of the medical profession are but a small part of world problems, yet they are a part, and it is incumbent on every practitioner to keep himself informed on these matters. Here Sir Arthur Newsholme's book is a trusty guide.

## Notes on Books, Current Journals and New Appliances.

## JUNGLE MEDICINE.

DR. ARTHUR TORRANCE has written a book called "Junglemania: Exploring the Jungles for Science".<sup>1</sup> The book is a mixture of medicine and experiences of jungle peoples in Africa and Borneo. It is well illustrated and will serve to interest and amuse those, and they are doubtless many, for whom tales of primitive life and adventure hold an interest.

<sup>1</sup> "Junglemania: Exploring the Jungles for Science" by A. Torrance, M.D.: 1933. Australia: Angus and Robertson, Limited. Crown 8vo., pp. 314, with illustrations. Price: 6s. net.

<sup>1</sup> "Medicine and the State", by Sir Arthur Newsholme, K.C.G., M.D., F.R.C.P., with a foreword by William H. Welch, M.D., LL.D.: 1932. London: George Allen and Unwin Limited. Demy 8vo., pp. 295. Price: 5s. net.

## The Medical Journal of Australia

SATURDAY, JULY 1, 1933.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

### THE TUBERCULOSIS PROBLEM.

MEDICINE has many problems. Each is surrounded by difficulties peculiar to itself, and each has its bands of workers, divided by great distances and speaking different tongues, but fired by a common zeal and by a desire to solve the riddle. When the experience of workers in different countries is correlated, it is possible to gain a wider view, and from the wider view to assess the suitability and the adequacy of measures undertaken in a smaller sphere. Attention must therefore be drawn to a report on the prevention of tuberculosis appearing in the December, 1932, issue of the *Quarterly Bulletin of the Health Organization* of the League of Nations. The report is the work of a special reporting committee appointed by the Health Committee of the League of Nations in 1931. Professor Léon Bernard, of Paris, was President of the Special Committee; the members of the Committee were Dr. C. Hamel, of Berlin, Dr. A. S. MacNalty, of London, and Dr. W. B. Soper, of the United States of America; Dr. Et. Burnet, of the Pasteur Institute, was Secretary. Though the report was drawn up by Dr. Burnet for the Special

Committee, it was discussed by the Health Committee, and the conclusions were formally adopted by that body. The report is so comprehensive that it will not be possible on this occasion to do more than refer to some of the more important aspects of it.

The first point on which emphasis is laid is that tuberculosis is a social disease. A disease is regarded as being a social one:

(i) If the persons suffering from it live in groups, varying in density and in the extent of their interdependence, the density and solidarity of those groups adding to the biological characteristics of the disease epidemiological characteristics which determine its extent, its intensity and its course; (ii) if it exhibits special characteristics due to the fact that society is divided up into categories or classes possessing different means of livelihood, upon which resistance to the disease depends.

This definition is followed by the statement that social disease is met by social hygiene. Social hygiene is defined as:

(i) Hygiene for the masses, which cannot be carried out by the individual or by the family; (ii) a form of hygiene which, taking account of the economic inequality of classes—of the fact that there are rich and poor—makes good such inequalities from the point of view of public health.

Social hygiene, it is stated, has been described as the equalization of the classes in terms of health. At first sight these definitions would appear to imply that tuberculosis was a disease peculiar to the poorer members of the community. Of course, it is nothing of the kind. The well-to-do may live in unhygienic surroundings, as well as the poor, and they often do. It is the prevention of infection that must be the aim of the social hygienist. The most important social factors to be considered are housing, nutrition and education. These factors are put in this order in the report. It would possibly be better to put education first, for, if people were educated to appreciate the seriousness of tuberculous infection, to know how it occurred and how it might be avoided, they would, if they were sufficiently well-to-do, be properly housed and fed. Much might be written on education, on housing and on nutrition in relation to tuberculosis. Articles on these subjects have been published in this journal over and over again. Two facts may be restated here as being important for dissemination

among the public. In the first place there is no need to stuff the unfortunate patient with food, as he was wont to be stuffed in bygone days, and secondly, a tuberculous patient, even if he is suffering from an "open" infection, need not, if he has been taught how to look after himself, be treated as though he were suffering from the direst and deadliest of plagues. The essential prophylactic agency in the opinion of the compilers of the report is the dispensary. All those with experience of the workings of an anti-tuberculosis dispensary will agree with this statement. It is, moreover, interesting to note the opinion that one well organized dispensary is necessary and sufficient for an urban population of about 200,000 inhabitants, and in the country, according to the density of the population and the means of communication, for 30,000 to 50,000 inhabitants. According to this estimate, Australia is inadequately supplied with dispensaries.

Two important conclusions in the report call for special mention. The first is that every country in which a widespread disease prevails should possess an institute for research on that disease; this is rightly held to be true of tuberculosis no less than for malaria and for cancer. The health departments of the Commonwealth and of the several States have their divisions of tuberculosis, or else they have special officers dealing with tuberculosis from the public health aspect. In no instance is there a State institute for research into tuberculosis. The question of research by government departments and of State aid for research is such a large one that no more than passing mention can be made of its necessity. In the other conclusion to be noted a plea is made for the establishment of special chairs in tuberculosis. Whether there is need for such chairs in Australia is debatable. If there are to be special chairs for tuberculosis, why not for the other two most potent causes of death, cancer and cardio-vascular diseases? At least for the present it would appear that chairs of preventive medicine will do what is necessary in Australia. Though preventive medicine is taught in the three medical schools of Australia, the University of Sydney is the only one that has a chair of preven-

tive medicine. It is high time that the Universities of Melbourne and Adelaide followed the example of Sydney in this matter.<sup>1</sup>

## Current Comment.

### HAFFKINE'S PLAGUE VACCINE.

HAFFKINE'S plague vaccine was one of the earliest of the prophylactic bacillary vaccines, and it has proved to be one of the most valuable. During the thirty-five years since it was first prepared it has been employed as a personal prophylactic on millions of occasions. In India its use has become one of the most important measures in the prevention of plague. In view of this and the amount of research and experimental work that has been done, it is remarkable that its composition and its mode of preparation should have altered so little since Haffkine first produced it in 1896. Certain improvements have been made, it is true; but on the whole, these are of minor importance; the essentials are the same. The story of the origin and development of Haffkine's vaccine is an interesting one. It has recently been set down for the first time by J. Taylor, the present Director of the Haffkine Institute at Bombay.<sup>1</sup> Haffkine received his training in bacteriology at the Pasteur Institute, Paris, where he worked for eleven years under the eye of the great Pasteur himself. He became interested in cholera vaccination, and proceeded to India in 1893 for the purpose of testing his theories and attempting to confirm the results of his experimental work on this subject. It is enough to say here that he achieved a splendid success. As far as is known, his first opportunity of investigating the possibility of plague vaccination came in 1896, when he was appointed a member of a committee constituted for the purpose of inquiring into all the features of plague, which at that time was raging in epidemic form in Bombay. Haffkine commenced work on October 8, 1896, and, on January 10, 1897, inoculated himself with ten cubic centimetres of his vaccine. In three months he had evolved and tested a vaccine which, in all essentials, was the same as the Haffkine vaccine of today. His achievement is all the more remarkable because the culture of plague bacilli is allowed to grow for six weeks before the vaccine is prepared.

The culture medium employed by Haffkine was a specially prepared mutton broth, to which a small quantity of *ghee* or coconut oil was added. The medium was distributed in flasks, inseminated with plague bacilli and incubated at room temperature. The well known stalactite-like growths of plague bacilli formed under the droplets of *ghee* or coconut oil; they dropped or were shaken off the surface and fell to the bottom, forming a thick sediment. At the end of about six weeks the contents of the flasks

<sup>1</sup> Indian Medical Research Memoirs, Memoir Number 27, March, 1932.



were sterilized by heat. The vaccine consisted of the whole of the contents, fluid and sediment. Haffkine believed, and later researches have proved him right, that the most important part of the vaccine was the fluid part; for in it were the ecto-toxins necessary for the immunization of the individual against the toxic effects of plague infection. He believed that injection of these ecto-toxins would lower the case mortality rate. His views were not accepted at the time.

Taylor describes the preparation and storing of the vaccine, and shows how the more or less crude methods originally employed by Haffkine have been gradually improved by the introduction of certain refinements. For example: siphonage, which was formerly started by oral suction, is now carried out by machinery, and bottling, which was formerly a tedious process, entailing much handling, is now done by the aid of an ingenious mechanical device that hermetically seals the phials as well as filling them. Handling is reduced to a minimum. Each phial at first has a long, narrow neck; at the completion of the bottling process this neck is sealed off and removed; it is labelled and held as an "office copy", as it were, of the contents of the remainder of the phial.

It is of interest to note that during the course of research work in 1911 it was found that Bombay rats had developed a high degree of immunity to *Bacillus pestis*. For the purpose of animal inoculation experiments and the cutaneous passage of *Bacillus pestis*, rats had to be imported from Madras. This procedure is still employed. The Madras rats are used as a living culture medium; no intermediate cultures are made on artificial media.

A large part of Taylor's paper is devoted to the consideration of statistics. These show clearly that the use of Haffkine's vaccine has been of enormous value in the prevention of plague and the reduction of the case mortality rate. One of the most interesting sets of figures was obtained by Haffkine himself in 1897. Plague broke out in the House of Correction, a gaol in Byculla, giving Haffkine his first opportunity of testing the value of his vaccine in a controlled experiment on people exposed to the risk of infection. He inoculated 147 of the prisoners and left 172 uninoculated. All were exposed to the same risks. Two only (13.6%) of those inoculated became infected with plague, and neither of them died; twelve (69.7%) of the uninoculated became infected, and six of them died. This experiment did much to popularize the use of the vaccine.

Haffkine relied on naked-eye examination of cultures of *Bacillus pestis* as a test of purity. In broth *Bacillus pestis* produces a characteristic stalactite-like growth. As a final test of purity at the completion of the incubation period, he inoculated agar plates from the broth and observed the appearance of the resulting growth; *Bacillus pestis* colonies gave a characteristic ground-glass appearance when examined through the agar by reflected light. These tests were probably quite reliable in the hands of

such an experienced worker as Haffkine; but they had obvious disadvantages. The tests now employed give more reliable results. One important test consists in the inoculation of a blood-agar medium and what is known as an acid-digest-agar medium. Contaminating organisms grow well on either medium within twenty-four hours at 37° C.; *Bacillus pestis* grows well, even in a very weak dilution, on blood-agar by the end of forty-eight hours at room temperature (26.6° C.), and does not grow at all at dilutions weaker than one in one hundred on the acid-digest-agar medium. Single colonies can be easily picked off from the blood-agar medium. The virulence of the strains of *Bacillus pestis* is ascertained by means of inoculation of white mice with standard dilutions.

The methods of standardization of the vaccine are still inexact. No method depending upon counting the bacteria is applicable. Haffkine employed the rather crude method of human inoculation, gauging the potency of the vaccine by the intensity of the reaction. Standardization at the present day depends on the employment of standardized methods of preparation. Taylor remarks: "We may state our opinion that the plague vaccine, as prepared at the Haffkine Institute, by the use of standardized methods of manufacture, is a product of regular composition and strength, and that biological methods of testing show it to be of regular and high immunizing value." Biological methods of standardization will no doubt be devised in the course of time.

No discussion of Haffkine's work would be complete without reference to the unfortunate occurrence at Mulkowal, in the Punjab, in 1902, when nineteen persons inoculated from the same bottle of vaccine died of tetanus. There was an intensive inoculation campaign in the Punjab at the time, and, in order to cope with the huge demands for vaccine, Haffkine used an emulsion of an agar culture, sterilized by heat and untreated with carbolic acid. The contents of many bottles became contaminated with saprophytes. The commission appointed to inquire into the matter were unable to decide whether the contamination with tetanus bacilli had occurred in Haffkine's laboratory or not. Haffkine asserted that the contamination could not have occurred in his laboratory, and he employed sound arguments in support of his contention. Taylor remarks that the disaster threw a shadow over Haffkine's life and seriously affected his career. In the light of present knowledge, the hurried methods he employed at that time would be condemned; but it would seem that the implications of the Commission of Inquiry, and, incidentally, of the Lister Institute, were unnecessarily cruel.

Taylor's paper is a long one, containing many chapters of interest to the bacteriologist and the student of medical history. It is impracticable to touch on all its features here. The paper is entertaining as well as informative; any medical practitioner would be amply repaid for an hour spent at its perusal.

## Abstracts from Current Medical Literature.

### RADIOLOGY.

#### The Diagnosis of Renal Tuberculosis.

CHARLES A. WATERS (*American Journal of Roentgenology*, January, 1933) states that renal tuberculosis is always of hematogenous origin and secondary to tuberculosis elsewhere in the body; it never results from an ascending infection from the ureter or bladder. In the vast majority of the cases of renal tuberculosis the original focus of infection is quiescent and oftentimes not suspected. Calcified areas may be seen in the plain film of the kidneys representing tuberculous foci, and the differentiation between these shadows and those of calculi can usually be made by the fact that stones occur only in the pelvis and calyces, lie more medially, and often assume the shape of the pelvis or calyx in which they lie, while a tuberculous calcification is usually more irregular and closer to the capsule. The earliest recognizable X ray finding is the alteration in the outer margin of a minor calyx seen after pyelography. The involvement of the tip of the papilla which lies in the cup of the calyx, produces the characteristic "fringing" of the outer margin of the calyx, such "fringing" never occurring until the tuberculous ulceration has extended into the papillae and eroded into the calyces. This "fringing" of the calyces is characteristic of tuberculosis. The X ray appearance of a tuberculous pyonephrosis differs from that of an ordinary pyonephrosis, in that some of the calyces will usually present definite signs of "fringing". If a kidney has recently bled, a clot occasionally forms and will produce irregularities in the calyces and will even complicate the picture by producing a so-called filling defect. There are no contraindications to pyelography in renal tuberculosis.

#### X Ray Diagnosis and Localization of Opaque Foreign Bodies in the Air Passages.

WILLIS F. MANGES (*American Journal of Roentgenology*, March, 1933) discusses various aspects of the X ray diagnosis of foreign bodies in the respiratory passages, and insists that every child with a cough should have an X ray examination of the chest and naso-pharynx. By far the greater number of foreign bodies are found in the lower lobe bronchi if they pass through the trachea. They go as far toward the dependent portion of the lung as the lumen of the bronchus will permit and, after long sojourn, may go even further by way of the processes of ulceration and destruction of tissue, so that the lower lobe areas must be searched with special care. A localized infective process, especially in the inner posterior portion of either lower lobe, should be looked upon as of foreign body

origin until proof is obtained that there is not a foreign body present. A Röntgenologist, even with excellent skiagrams, may overlook a foreign body unless he has the possibility of its presence constantly in mind as the most probable cause of unilateral localized pulmonary infection in the lower lobes.

#### Intrapelvic Protrusion of the Acetabulum (Otto Pelvis).

MAURICE M. POMERANE (*Journal of Bone and Joint Surgery*, July, 1932) discusses at length the condition known as Otto pelvis—a non-traumatic, chronic, progressive arthritis of the hip joints characterized by intrapelvic protrusion of the acetabulum and head of the femur. The condition must be regarded as an atypical but essentially non-specific arthritis. The deformity may be caused by any disease resulting in a localized osteomalacia of the acetabulum, providing that the femoral head remains intact and thus maintains its boring qualities. The destructive process, however, must not be too severe and must permit bone regeneration. The diagnosis, even in early cases, may be made by X ray examination. The fundamental changes occur in the acetabulum. The disease results in an inward protrusion of the acetabulum, so that it projects into the pelvis as a rounded, globular, dome-shaped mass. The degree of protrusion varies from a few millimetres to four or five centimetres in severe cases. As the acetabulum migrates, it inclines upwards, inwards and forwards, so that it may project above the ramus of the pubic bone, spreading towards the obturator fossa and at times materially encroaching upon and constricting it. In extreme cases the protrusion extends up to the sacro-iliac joints and, as a result, unilateral constriction of the pelvis occurs. The inner wall of the acetabulum may be shell-like in thinness or else occur as an extremely dense eburnated wall. As it extends into the pelvis a low grade osteoplastic process is initiated whereby nature splints the yielding joint by the formation of a dense wall on the inner aspect of the acetabulum parallel to its projecting margin. The external margins of the acetabulum project outward over the neck of the femur as irregular serrated vegetative formations. In the typical deformity there is preservation of the integrity of the femoral head, although it may at times be slightly mushroomed or a little elongated. Projecting from the margins of the articular surface of the head, bony excrescences are present which extend over the femoral neck. The constricted acetabular inlet, combined with the osteophytic projections from the head, effectually locks the femoral head within the acetabulum. As the head of the femur is submerged within the acetabulum, the trochanters approach the lateral margins of the pelvis and incline posteriorly. The greater trochanter impinges on the lateral margins of the ilium and the lesser tro-

chanter approaches the ischium. The arrest of the trochanter at the lateral margin of the pelvis limits the deformity. Further inward migration of the femur is impossible, its boring action is suspended, and the periosteum on the inner wall of the acetabulum becomes ossified. The active stage of the disease is thus terminated and the deformity is permanent.

#### X Ray Confirmation of Aneurysm of the Heart.

F. M. GROEDEL (*Münchener Medizinische Wochenschrift* (February 10, 1933) writes that aneurysm of the heart wall can be diagnosed only by X ray examination. Since syphilis is now treated early, aortic aneurysms have become less frequent. Heart aneurysms are now slightly more frequent, being in the majority of cases due to a previous coronary thrombosis and rarely to a gumma of the cardiac wall. The author quotes the case of a man, aged fifty, in whom the diagnosis was made by screening and X ray film. An electrocardiogram revealed the typical curve of a coronary thrombosis.

#### Reducible Oesophageal Orifice Hernia.

JOHN R. CARTY (*Radiology*, March, 1933) describes a sign calling attention to the possibility of diagnosing a diaphragmatic hernia with the patient in the erect position. This lesion is not of common enough occurrence to warrant long routine search in the horizontal position, and consequently many are missed. The *hiatus oesophagi* is formed as a space between two muscle bundles of the diaphragm arising from the spine. Lack of or imperfect development of these muscles gives an opportunity for herniation to occur. As the stomach herniates through the hiatus, one of two things probably happens: the involved portion of the stomach may pull the end of the oesophagus along with it sufficiently to make an upward curve, or there may be a direct pressure against the oesophagus, causing the redundant portion to buckle and thus describe a curve. This cannot happen with hernia of the short oesophagus type, and there is absence of the following signs. In the erect position the oesophagus and stomach may appear perfectly normal until, by increasing the intraabdominal pressure sufficiently, the end of the oesophagus is made to become angulated, even though not sufficiently to cause a gas bubble to appear above the diaphragm. The patient is placed in the vertical right anterior oblique position and a fluid opaque meal is given. The patient is told to take a mouthful of the barium mixture without swallowing and is then instructed to inhale deeply through the nose, the head being bent slightly forward. While the breath is held in full inspiration, the patient is told to swallow. In the meanwhile the examiner's right hand is pushed firmly against the anterior abdominal wall. The left diaphragm is watched care-

fully to see that the patient does not expire even slightly, as there is some tendency to do on deglutition. Close attention must be paid to the head of the barium column as it descends. If a hernia is present, the barium stream usually takes an upward course as it is about to enter the stomach. This may be a sustained direction or merely a transitory flip, occurring only when the head of the barium column reaches the region. If this alteration in the stream is noted, careful examination should be made in the horizontal position for confirmation.

#### PHYSICAL THERAPY.

##### X Rays in the Treatment of Gas Gangrene.

JAMES F. KELLY (*Radiology*, April, 1933) recommends the use of X ray therapy in cases of gas gangrene due to *Bacillus welchii* infection. In at least three cases of the author's series amputation was deferred to see what action X rays would have. Amputations were unnecessary in these three cases, as improvement followed immediately after the first X ray treatment, and all the patients recovered. All of the patients in the series had open wounds, all had active gas bacillus infection clinically, the laboratory reported positive cultures of gas bacillus, and all patients were seriously ill. X rays were used in conjunction with many other therapeutic measures, but the patients for whom X ray therapy was used seemed to do very much better than those who were treated by the usual methods without X rays. Very light dosage was used and an exposure was given daily for four or five days.

##### Röntgen Therapy of Rheumatic Heart Disease.

ROBERT LEVY AND ROSS GOLDEN (*American Journal of Roentgenology and Radium Therapy*, January, 1933) state that thirty-two patients with rheumatic heart disease of varying degree of severity received 281 Röntgen irradiations over the cardiac area during the past five and three-quarter years. In seventeen instances improvement has been observed, in some cases more marked than might have been anticipated. In six cases therapy was considered to be of doubtful value, and in two cases there was definitely no improvement. Seven patients have died—two of subacute bacterial endocarditis and five of cardiac insufficiency. Five patients with paroxysms of severe heart pain have been completely relieved of this symptom. Temporary relief was afforded in two other cases, and in one instance no beneficial effect was observed. In a number of cases, following Röntgen therapy, a low grade, smouldering carditis apparently has become inactive. In such patients there have been no signs of recrudescence of active rheumatism during the period of observation, which in seven instances has been over five years.

Changes in the form of the electrocardiogram have been noted in nineteen cases. These changes were regarded as due to the effects of irradiation on the myocardium, with modification of the rheumatic lesions. Irradiation reactions were observed in sixteen patients. There was no evidence of injury to the heart, nor was the course of the disease unfavourably influenced. Earlier impressions concerning the value of irradiation of the heart in rheumatic carditis have been confirmed after a six-year period of observation. Patients in the first attack of rheumatic fever with slight cardiac involvement offer the best chance for successful therapy, and in them the danger of subsequent cardiac damage may be minimized. In cases with a low grade infection and predominantly cardiac involvement, activity of the lesions often appears to subside following Röntgen treatment. Röntgen therapy may afford great relief to certain patients with rheumatic heart disease in whom paroxysmal cardiac is the chief form of discomfort.

##### Indication for Irradiation in Intrauterine Bleeding.

JOHN H. VAUGHAN (*Radiology*, April, 1933), after referring to the treatment by drugs, by curettage and by hysterectomy often meted out to a patient with intrauterine bleeding, mentions some common conditions amenable to irradiation. In most intractable non-gonorrhoeal cases of leucorrhœa cure may be expected within about six months. For menorrhagia and metrorrhagia, irradiation of from 300 to 800 milligramme-hours in the fundus will usually correct these conditions. Hypertrophic endometritis and so-called idiopathic bleeding may be corrected with approximately the same dosage. In excessive menstruation in consumptives who bleed excessively at menstruation, with resultant weakening, menstruation should be suppressed by irradiation at least until the patient's tuberculosis has become arrested. For uterine polyp the cervix should be dilated, the polyp should be removed, and from 500 to 800 milligramme-hours of radium should be applied in the fundus. If the patient is past thirty-five years of age, it is probably best to give as much as 2,500 milligramme-hours. In large boggy retroflexions, if the patient is near the menopause and the condition is causing marked symptoms, relief may be given in a few months by the use of large doses of radium. For non-malignant uterine tumours patients past thirty-five years of age should be given large doses of radium, if the tumour is causing symptoms and if there are no contraindications. If irradiation is contraindicated, resort to surgery should be made. Irradiation is preferable to surgery in these cases because the pain is many times less, the cost is less, the convalescence is markedly shortened, and the end-result is more satisfactory. Surgery in these cases is at least twelve

times more dangerous to the patient than irradiation. In cancer of the cervix it seems that the most doubting surgeons have at last been convinced that surgery should practically never be used. Adenocarcinoma is the most radio-resistant of the cancers, but even in it surgery does not seem so efficient as radium. In early cervical cancer the uterine, cervical and vaginal canals are the only areas in which the radiating substance is placed. However, if the cancer has metastasized, external radium or X rays should be used. Until recently surgeons and radiologists considered that a fundal cancer was best treated by combining radium and surgery. It seems that statistics are about to prove that it is best not to perform any surgical operation in these cases, but to depend on irradiation. The contraindications given are: (i) acute pelvic infection; (ii) patients under thirty-five years of age, unless the condition is malignant; (iii) pedunculated fibroids; (iv) uterine tumours larger than a four months' pregnancy, or those causing a considerable pressure, when the patient is suitable for operation; (v) marked anemia.

##### Radiation Therapy in Medicine.

IRA I. KAPLAN (*Archives of Physical Therapy, X-Ray, Radium*, September, 1932) states that one of the happiest of discoveries has been the knowledge that irradiation proves valuable not alone in malignant disease, but that even benign lesions are found to be amenable to this type of treatment. As far as is known, both radium and X rays act alike biologically; thus the determination as to which agency to use depends upon the type and form of lesion to be treated. In general, X rays are employed: as a curative measure in treating large lesions; for inaccessible lesions; for general metastases; in association with surgery as a pre-operative and post-operative form of therapy; as an adjunct to radium therapy; and as a palliative measure in hopeless cases. Radium is employed: for the direct treatment of tumour growth by direct superficial contact and by direct application inside the tumour or inside an orifice; together with surgery; in the form of a surface pack where large quantities of radium are available. Newer methods of administering X rays to the body over a longer period of time and in divided doses have been found to give better results, and by altering certain physical factors in the scheme of treatment changes in the resultant X rays produced thereby are delivered to the patient. At times they have changed the voltage used, depending on the type of case to be treated, from 90 kilovolts to 200 kilovolts constant potential. Again, as not all tissues respond alike, it has been found valuable to vary the filtration from no filter at all for certain benign and malignant dermatological lesions to several millimetres of copper, as employed with the Coutard method.



## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, Adelaide Street, Brisbane, on April 7, 1933, Dr. ALEX P. MURPHY, the President, in the chair.

#### A Diabetic Survey.

Dr. EUSTACE RUSSELL read a paper entitled: "A Diabetic Survey" (see page 1).

Dr. J. V. DUHIG thanked Dr. Russell for the considerable trouble he had taken in the presentation of his paper. He remarked how quickly and how very quietly, without fuss and with intense organization, Dr. Russell had brought the treatment at the hospital for this unfortunate part of the community up to date, so that now the treatment was on a sound basis. They were much more fortunate than ten or fifteen years ago.

There were two points to be considered. First, diabetes was not a disorganization of the carbohydrate metabolism so much as a disorganization of the fat metabolism. For instance, vascular changes in diabetics were indirectly due to atheroma, and fat was found in the intima and cholesterol in the vessels was actually seen. Secondly, diabetes was due to the incomplete combustion of fat; therefore the amount of fat taken should not be overdone. Before the diabetic clinic was established, most of the patients with diabetic coma had died; now most of them were saved. This was due also to the very admirable team work evolved in the ward, and not only to the discovery of insulin *et cetera*. Dr. Duhig remembered one unfortunate incident before that time, but now the standard had risen and most cases of diabetic coma were saved. The record was very favourable.

Insulin of and by itself was not the cure for diabetic coma, unless all other precautions were taken. If the patient were dehydrated, insulin, though injected, would not be taken through the body. The patient might be plunged from hyperglycemia to hypoglycemia, and Dr. Duhig thought a number of patients died owing to this, as the circulation was not restored till there was a large amount of insulin to be used. The patient was therefore reduced to a hypoglycemic condition.

Dr. Russell's work at the hospital and his paper were both admirable.

Dr. L. J. J. NYE thanked Dr. Russell for his very excellent paper, which appeared to have covered every phase of the subject.

Dr. Duhig had made some remarks about the work of Ashcroft in connexion with fat metabolism. Disordered fat metabolism in diabetes was well recognized and experimental work done in England and on the Continent had shown that the coma was due more to the ketone bodies than to the excessively raised blood sugar. This fact was amply demonstrated by Himsworth, of the University College Hospital, who treated patients in a precoma stage by giving glucose alone for the first twenty-four hours. It was shown that, as the ketone bodies fell, the carbon dioxide combining power and the blood sugar were raised, and the patient's condition improved in spite of the abnormal rise of the blood sugar. He pointed out that, in the treatment of diabetic coma, insulin should be given to cover the glucose, not glucose to cover the insulin, as was the present custom.

Dr. H. S. WATERS thanked Dr. Russell for his most interesting paper. Dr. Waters had used diathermy for gangrene in one patient, at first with asepticism, but the end result was quite good. The gangrenous part had sloughed off after a time and left quite a healthy scar behind. The treatment was not diathermy to the gangrenous part, but medical diathermy to the leg to increase the circulation. The point of not using a tourniquet in amputation in cases of diabetic gangrene was important, as sloughing might occur. Dr. Waters had had this unfortunate experience in one patient. What was

the considered opinion in a case of pregnancy complicated by diabetes? To continue or terminate the pregnancy?

Dr. Waters thanked Dr. Russell for many practical points to emphasize the complications and treatment of diabetes.

Dr. ALEX P. MURPHY thanked Dr. Russell for his very interesting and instructive paper. The most important and valuable point was that the figures had been taken from Dr. Russell's own wards and were matters of personal observation and experience.

Dr. Russell, in reply, thanked Dr. Duhig for his kind remarks on the diabetic clinic. The work was very interesting and delightful, and without Dr. Duhig and his associates would be impossible. What Dr. Duhig had said about team work was perfectly true. The nursing in the hospital was the result of his own effort in teaching the nurses how to treat the patients. If a nurse were in the ward for three days and could not describe the symptoms of hyperglycemia, she was a menace to the ward where people were receiving large doses of insulin. Dr. Russell thought some of the earlier patients with coma were lost perhaps because of the nurses not knowing their work well. Dr. Russell thanked Dr. Duhig for his active, practical and intellectual interest.

In reply to Dr. Nye, Dr. Russell said that the condition of coma was that of broken or disorganized fat metabolism, and treatment with glucose was perfectly rational, as the fatty acids were burnt up by the glucose.

In reply to Dr. Waters, Dr. Russell said diathermy appeared to have very striking results, but he had had no experience with it. Medical diathermy appeared to be rational, as it would tend to restore the circulation. With regard to diabetes complicating pregnancy, Dr. Russell had had only one case in the last few years among the patients attending the diabetic clinic. She had done very well and had a live child and was well today. If a patient were pregnant and were under the proper régime there was no reason why she should not go to term.

### MEDICO-POLITICAL.

The following resolutions adopted by the Organization Committee of the Victorian Branch of the British Medical Association have been forwarded by the Secretary of the Branch with the request that they be published for the information of members.

**Specialty Contracts.**—A letter has been sent to the friendly societies in Victoria with regard to the appointment of a specialist panel, to be revised annually, which will take the place of the present unsatisfactory system. The members of the panel would charge lodge members at a reduced rate, to be agreed upon. The panel of specialists would be made available only to the lodge medical officers and specialists.

**Lodge Contract.**—Under the lodge agreement minor operations requiring a general or local anaesthetic should be charged for. Reduction of fractures and dislocations are provided free under the agreement. The salary to be paid for female members is the same as for male members of the lodge, namely, a minimum of 20s. and 25s. for town and country respectively. There are only two mixed lodges recognized by this Branch, namely, the I.O.R. and O.S.T., which pay 16s. for single females without dependants. But for females with dependants or females in the country they pay the male rate. In female lodges only the rate is 12s. Members are advised that in the above respects attempts have been made by local lodge secretaries to reduce the salary of the lodge medical officer, but such action has no support from the Central Executive of the lodges.

**Medical Certificates.**—The friendly societies have agreed to pay a uniform rate of 5s. (to be paid at the time) for an additional sickness certificate for friendly society members who are employees of railway and other departments of the State, when the conditions of their employment require such a certificate.

**Football Surgeons.**—Honorary services to football clubs and other sporting bodies are disapproved by the Council. The following scale of fees was adopted:

For surgeons to League clubs, where attendance at a football match was not obligatory, the salary should be twenty-five guineas per year and private fees to be charged for after-treatment.

In Association clubs or for second eightheens of League clubs the fee should be ten guineas. If the surgeon was expected to attend every match, one guinea per attendance should be paid and private fees for after-treatment should be charged. The attendance upon a player should be first aid only, and the after-treatment of the player should be by his own medical attendant.

#### NOMINATIONS AND ELECTIONS.

THE undermentioned has been elected a member of the New South Wales Branch of the British Medical Association:

Rundle, Francis Felix, M.B., B.S., 1933 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

### Medical Societies.

#### THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Children's Hospital, Carlton, on May 10, Dr. F. KINGSLEY NORRIS, the President, in the chair. The meeting took the form of a series of clinical demonstrations.

##### Syphilitic Epiphysitis.

DR. ROBERT SOUTHEY showed a baby, aged nine weeks, which had been admitted to hospital at the age of five weeks with a history of inability to use the arms and legs since birth. At the age of three weeks it began to suffer from snuffles and on admission showed all the typical changes of the so-called florid syphilis, including snuffles, enlargement of the liver and spleen, and some superficial ulceration of the mouth and anus. There was marked swelling of both shoulder joints, a certain amount of swelling at the elbow joints, and also slight swelling at the lower ends of the tibia and fibulae.

DR. COLIN MACDONALD said that the X ray appearances of the long bones were characteristic of congenital syphilis. The lesion was really an osteochondritis with destruction of the metaphysis. The bone was so weakened at the epiphyseal line that fracture might readily occur. There was also considerable periosteal reaction.

Dr. Southey said that he showed the patient because symptoms due to epiphysitis were rarely present at birth. Usually the child appeared healthy at birth and the symptoms appeared some time between the second and eighth week. It also illustrated the fact that the osseous changes were widely distributed throughout the body. This child had symptoms and signs at the ends of most of the long bones, but it was important to remember that even with generalized osseous change the symptoms might be confined to one site only.

The response to treatment was remarkable, provided the general condition of the child would allow of intensive anti-syphilitic therapy. This child was given injections of both "Bismol" and "Sulfarsenol", with mercurial inunctions of *unguentum hydrargyrum* daily, and *hydrargyrum cum creta* by mouth, 0.03 gramme (half a grain), twice a day. One half of a cubic centimetre of "Bismol" and five centigrammes of "Sulfarsenol" were each injected intramuscularly once a week. The "Sulfarsenol" had been increased till now the child was having fifteen centigrammes a week.

The response to this treatment had been excellent so that the swellings had subsided and all the limbs could now be moved normally.

##### Tuberculous Peritonitis.

DR. H. BOYD GRAHAM showed a male child, aged two and a half years, admitted to hospital with a history of increasing swelling of the abdomen for the past three months. The early history of the child was completely uneventful and there was no history of tuberculosis in the family, nor had the child been in contact with anyone with tuberculosis. During these three months the child had not lost weight and the general condition had remained quite good.

Examination revealed a healthy-looking child whose heart and lungs were clinically normal. The abdomen was full, but soft, with no tenderness or rigidity. There was no dullness in the flanks nor any shifting dullness. Lying obliquely across the lower part of the abdomen was a large, irregular, firm and fixed mass, dull to percussion, not tender, and extending down to the pelvis. Rectal examination revealed only some fullness in the pouch of Douglas.

Radiographic examination of the chest revealed no enlargement of the hilar glands, but the appearance of the left upper lobe was suspicious of early tuberculous infiltration. There was a pronounced positive reaction to von Pirquet's test with both human and bovine tuberculin. The Wassermann and Casoni tests both failed to yield a reaction.

While in hospital the child had a slight evening rise of temperature, rarely above 37.8° C. (100° F.). His motions had been regular and normal. Despite several enemata, each with a good result, there had been no change in the size or position of the mass. An X ray examination of the colon revealed no dilatation or other abnormality.

Dr. Graham said he regarded the case as a loculated or plastic type of tuberculous peritonitis. The masses were not hard enough to be glands, and the general condition of the child was being too well maintained for the condition to be neoplastic. In addition, the course of the disease was slightly febrile. Apart from the suspicious radiological appearance of the left lung he thought that much significance should be attached to a positive reaction to the von Pirquet test in a child under the age of three years. Although it was commonly held that laparotomy was to be advised only for the ascitic type of tuberculous peritonitis, it frequently had a beneficial effect in the plastic loculated type as well, but the risk was that faecal fistulae might follow. Treatment with tuberculin was also disappointing. He thought that outdoor treatment on general lines with heliotherapy and ultra-violet light exposures was the best method to be used for these cases.

##### Tuberculous Caries of the Spine.

DR. J. B. COLQUHOUN showed a boy, aged eleven years, who had been perfectly healthy until the beginning of 1925, when he had some trouble on walking and complained of pain in the ribs. It was noticed that he had developed a kyphosis at the level of the ninth and tenth thoracic vertebrae, accompanied by tenderness and rigidity in this region. X ray examination then revealed a bony lesion of these vertebrae, with a suggestion of abscess formation. Since that time the child had been treated in recumbency out of doors. The family history revealed no evidence of tuberculosis on either side, nor was there any history of contact.

In May, 1929, tonsillectomy was performed and tubercle bacilli were isolated from the tonsils. Later in the year the patient developed enlarged tuberculous glands of the neck, which were excised. On admission to the Frankston Orthopaedic Hospital in March, 1930, there were five healed scars in the left lumbar region, where cold abscesses had been aspirated, and there were discharging sinuses in the neck, the left groin and lateral aspect of the left thigh. These various sinuses were treated with heliotherapy and exposure to the mercury vapour lamp. By November, 1931, all the sinuses, except one in the back, were completely healed and the enlargement of the glands of the neck had subsided. Several times this sinus appeared as if it were about to heal, but after several days it would discharge freely, and this state of things existed till the onset of the present complications. Throughout all this period

of treatment the child seemed to improve in general health, though successive X ray examinations revealed little consolidation in the affected vertebrae.

Four weeks before the meeting he complained of pain in the loins, especially on the right side; he had a temperature of 39.4° C. (103° F.) and some oedema of the face. The urine contained a large amount of albumin. Two days later oedema of the face was less, but there was much oedema of the feet, extending up to the trunk. There was albumin in the urine in large quantities, but no blood or casts or pus.

The following day he passed seven motions in the twenty-four hours, each containing bright blood and a little mucus, and this had persisted to the present time, though the oedema and albuminuria were very much less. He had passed much more urine during the past three days, when he received ten grammes of urea three times a day.

Dr. Colquhoun regretted that he did not have the facilities to culture the urine and faeces. He thought that the condition must be due either to an intercurrent infection, although there had been no nephritis or colitis amongst the cases, or else to a rupture of an abscess into the colon, though this would not account for the renal condition. The onset was too sudden for lardaceous disease, nor was blood present in the urine and faeces in this condition. He was inclined to think that there was an intercurrent infection.

Dr. REGINALD WEBSTER supported this view. It was always difficult, he said, to demonstrate the tubercle bacillus in those cases when an abscess ruptured into the colon, because only large cold abscesses did this, and in his experience, the larger the abscess, the less chance there seemed to be of recovering the bacillus. This child was in just the condition of low general resistance to favour the development of an intercurrent infection. It was too sudden for lardaceous disease, which, after all, was a rare disease in childhood and seemed only to follow prolonged mixed infection. He remarked incidentally that the bacillus recovered from this boy's tonsils was of the human type. The statement was frequently made that bone and joint tuberculosis was commonly bovine. This was quite wrong. Bone tuberculosis was invariably human.



### Obituary.

#### JOHN WILLIAM SPRINGTHORPE.

Dr. JOHN WILLIAM SPRINGTHORPE, of "Joyous Gard", Murrumbidgee, son of John Springthorpe, Derbyshire, England, died on Saturday, April 22, 1933, in his seventy-eighth year. Born in Wolverhampton, England, in 1855, he was brought to Australia at an early age, and first lived in Balmain, Sydney. Educated at the old Fort Street School, he left there as *dux* in 1869, the year after the late Edmund Barton, and went to Sydney Grammar School. In 1872, on coming to Melbourne, he entered Wesley College, at which he became a Walter Powell Scholar and Exhibitioner. At the University of Melbourne he studied arts and medicine, graduating Master of Arts in 1878 and Bachelor of Medicine in 1879. After a period

as medical officer at the Beechworth Asylum, which coincided with the last days of the Kelly Gang in that district, he went to England and was admitted a member of the Royal College of Physicians in 1881, being the first Australian graduate to become a member of the College. Then followed several years' hospital work, chiefly in London, under Gowers and Ferrier at Queen's Square and Broadbent at Mary's.

Returning to Melbourne in 1883, the following year he obtained his degree as Doctor of Medicine and commenced practice as a physician in Collins Street East. For a short period pathologist to the Alfred Hospital, he became physician to out-patients at the Melbourne Hospital in 1884 and was elected by the subscribers as in-patient physician in 1887, a position he continued to hold until the war. During his professional career he contributed numerous papers to Australian and English journals covering a wide range of clinical medicine. In 1891, at the request of a patient, he visited Berlin to study under Koch, and was afterwards a consistent advocate of tuberculin, both in diagnosis and treatment. Other papers dealt with the treatment of typhoid and pneumonia, and with the importance of psychological factors in disease, particularly the relation of suggestion to the causation and treatment of hysteria. He was one of the first to advocate the use of morphine, strychnine and atropine in its present hypodermic combination. In 1887 he became lecturer at the Melbourne University in therapeutics, dietetics and hygiene, and in 1913 published a text book in two volumes dealing with these subjects, especially as applicable to Australian conditions. He was President of the Victorian Branch of the British Medical Association in 1891, Vice-President of the Inter-colonial Medical Congress in Sydney the following year, President of the Hygiene Section in 1895 at the Brisbane meeting of the Australian Association for the Advancement of Science, and President of the Hygiene Section of the Congress at Dunedin in 1896. Three years later he was Vice-President of the Medical Section of the Brisbane Congress, and in 1900 President of the Melbourne Medical Association. For some

years he edited the *Australian Medical Gazette*. In conjunction with Dr. A. S. Joske he was one of the official visitors to the hospitals for the insane, and was a keen advocate of the better treatment of mental disorders.

In the Deeming case he was associated with the late Dr. Fishbourne in an endeavour to have the prisoner's criminality attributed to insanity and dealt with on this basis instead of according to the legal procedure exemplified in the McNaughten test. With Dr. Fishbourne also he was instrumental in interesting Lady Talbot in the establishment of a residential colony for epileptics at Clayton, continuing thereafter as medical adviser and being in charge, since the war, of the cottage for returned soldiers.

Toward the end of last century he took a leading part in placing the training and registration of the dental profession in a satisfactory position, and when a faculty of dentistry was first established at the University of Melbourne, he became dean. He was closely associated with the foundation and subsequent work of the Royal Victorian Trained Nurses' Association and President of the Council in 1901. He also took an active interest in massage, being first Chairman of the Masseurs' Registration Board of Victoria; and in ambulance and first aid.



For his work in connexion with the Saint John's Association he was in 1912 made a Knight of Grace of Saint John of Jerusalem.

Springthorpe enlisted for active service in 1914 at the age of fifty-nine and left Australia with the first hospital unit as Lieutenant-Colonel. In Egypt he became Senior Physician to the Number 2 Australian General Hospital. He returned to Australia after the evacuation of Gallipoli and presented a report strongly criticizing Red Cross administration in Egypt. After a few weeks in Melbourne he returned to Egypt and France, and was later at the Third Australian Auxiliary Hospital at Dartford, Kent, where he was specially interested in shell-shock and other war neuroses. In connexion with this work he represented Australia at the Inter-Allied After-Care Conference in 1918. After returning to Australia in December, 1918, he continued, until the present year, to attend returned soldiers with nervous disorders at the Repatriation Department and the Epileptic Cottage at Clayton.

An enthusiastic worker for child welfare and education, he was one of the founders of the Tweddle (Truby King) Hospital for Babies and School of Mothercraft, and was President of the Society for the Health of Women and Children of Victoria. In 1926 he was Victoria's representative at the Royal Sanitary Institutes' Jubilee Congress in England, on child welfare, and on his return presented a report to the State Parliament on child health.

In addition to his many professional and public activities, Springthorpe was greatly interested in literature and art. He frequently contributed articles to the Press, and the year before his death published a play, "War's Awakenings". His collection of pictures and sculptures began at the time of the "9 x 4" exhibition of Roberts, Conder and Streeton in the eighties. As well as examples of these masters, he possessed works by Bunny, Longstaff, Fox, and Heysen; also of Bertram Mackennal's and Web. Gilbert's sculpture. In his student days a good footballer and member of the old Toorak team, he was always an ardent advocate of amateur sport. He was president of the first amateur cycling body in Victoria, one time judge of the intercollegiate boat race and patron of the Medical Students' Hare and Hounds. For many years he was an active member of the Yorick and Wallaby Clubs, and of the Old Wesley Collegians' Association, of which he had been a member for sixty-one years.

Apart from increasing deafness, his physical and mental faculties were unimpaired until the onset of his illness, a month prior to his death.

#### Dr. Felix Meyer writes:

My recollections of him go back to our school days at Wesley College, where for half a year I sat next to him in the sixth form, and came to know him for what he was—a brainy and brilliant boy, alive at every point, full of fun, impulsive, fearless, generous. Learning came easy to him, and he brought from college to university a wider scholarship than most public school boys. Exhibitions in classics, mathematics, English literature, with first class honours, gave him rank among undergraduates. Even with a double set of lectures (arts and medicine) he took his full share of sport—football and fives, and he was an enthusiastic hare and hounds follower. But he was more than a prize-winner—an honours man; the critic, the analyzer was early in evidence, and indeed, throughout his career, independent thought and action and outspoken criticism were marked characteristics. With this independent spirit went a tenacity of purpose which made him formidable to those who did not see eye to eye with him. But his sincerity was never in question, and if at times conviction was with him the better part of argument, he convinced by the pure force of his personality where argument would have failed. Not that he was unreasonable, but he wanted things done, and he wanted them done quickly. Anything like an abuse or misuse of authority roused his fighting spirit, and having espoused a cause, he threw himself wholeheartedly into it. What is more, he got things done; he was a great driving force, with method and a full sense of detail. Those who were associated with him in his building up of the Royal Victorian Trained Nurses'

Association, the Dental Association, the Australian Massage Association, and kindred institutions, realized his single-mindedness of purpose and his direct methods.

He was of great help to me in launching *Una* for the Royal Victorian Trained Nurses Association, and during the five years I edited that journal he was a most helpful and loyal colleague.

His professional career is dealt with elsewhere. He touched life at many points. Art made a great appeal to him, and he was among those who early saw the worth of artists like Fox, Longstaff, Conder, Roberts, Bunny, Streeton and others, and he acquired some fine examples of their work. The beautiful mausoleum in Booroondara Cemetery is largely his own design. (The statuary group was one of the first important commissions from this State to the late Sir Bertram Mackennal.) He was a friend and admirer of Web. Gilbert.

He loved his garden, and those who enjoyed his hospitality at "Joyous Gard" and strolled round the grounds with him, realized what tree, flower and shrub meant to him. He was a true lover of Nature, kind to animals; at his Murrumbidgee home he had a sanctuary for birds. He had a full sense of humour. In his walks with the Wallaby Club he was a lively companion, amusing, mirth-provoking.

The serious side of his nature was not shown to many. Wide reading and much pondering had given him his own philosophy of life and a "reasonable faith". He had great humanity; the pain and suffering of others touched him and moved him to action. Though increasing deafness in the last few years closed some avenues of pleasure for him, it could not kill his optimism, and the last talk I had with him in the hospital reflected the warm heart and boyish spirit of a man who never learnt to grow old. And so he travelled cheerfully on life's common way, and found in it the joy of service, making of life, to quote his favourite poet, Walt Whitman:

Day full blown and splendid—day of the immense  
sun, action, ambition, laughter.

*Ave atque vale.*

#### Dr. B. T. Zwar writes:

I am glad to be associated with any tribute that may be paid to the memory of my teacher and friend, John William Springthorpe. Over a period of more than thirty years I was associated with a number of the many activities in which he was specially interested. These included the Melbourne Hospital, the Royal Victorian Trained Nurses' Association, the Australian Massage Association, active service, the Edith Cavell Trust, and the Wallaby Club.

In all his activities his extraordinary energy and enthusiasm were matters for the greatest admiration. His early conviction and protests regarding the disabling influences which affected some of the Australian soldiers during their period of training in Egypt never received the recognition which these warranted.

During a very busy life he managed to play many parts, and he played them as though each was the essential interest of his life. Even when one differed from him on questions of policy, it was characteristic of his nature that this did not make the slightest difference to the most cordial relations. He always was a most agreeable and delightful companion, bubbling over with energy and enjoyment of life, and his death means the passing of a very warm-hearted friend.

#### Dr. J. G. Nihill writes:

As an old personal and professional friend of the late Dr. J. W. Springthorpe, I have pleasure in paying my tribute to his memory.

Whilst I was honorary physician to the Melbourne Hospital I was brought into almost daily contact with him. He was particularly interested and successful in dealing with cases of hysteria and other diseases of the nervous system.

As a member of the Dental Board of Victoria I was closely associated with him in all his efforts, which

resulted in the recognition by the Melbourne University of dentistry as a profession.

At first, after a course of study of two years, the dental student obtained the diploma of Member of the Australian College of Dentistry. Later, the status of the dentist was improved by extending the curriculum and granting the diploma of L.D.S. and the degrees of B.D.S. and D.D.S.

He enjoyed exceptionally good general health, and until a few weeks before his last illness was a fluent after-dinner speaker, a ready writer, an optimist and idealist. The best of ideals permeated all his work and his social and family life. When the old Melbourne Hospital was being pulled down, the committee of that institution allowed him to buy the gates fronting the Lonsdale Street entrance, and Mrs. Springthorpe, during her husband's absence at the World War, had them erected in front of his home, "Joyous Gard", Murrumbidgee. He had a portion of some of the old trees in the grounds of the old Melbourne Hospital cut into seats and placed in his large and beautiful garden.

He was fortunate in having an able and devoted wife who took a great interest in all his various activities, and as hostess gave entertainments in the cause of charity or to give pleasure to their friends.

I have lost an interesting, always loyal and almost lifelong friend.

#### MICHAEL HENRY DOWNEY.

The following appreciation of the late Dr. Michael Henry Downey has been written by Dr. H. F. Dunstan, of Prospect, South Australia.

Michael Henry Downey died on the morning of April 17, 1933. His death was a great shock to his numerous friends all over Australia.

After graduating Bachelor of Medicine and Bachelor of Surgery in Melbourne in 1902, he went to Edinburgh and studied mental diseases. He was later associated with Dr. Cleland as Deputy Superintendent of the Parkside Mental Hospital (South Australia), and on Dr. Cleland's retirement was appointed Medical Superintendent in 1912, and he occupied this position with distinction until the time of his death.

Since 1912 he had lectured and examined in psychological medicine at the University of Adelaide, a work which always afforded him great pleasure. He was ever willing to assist as far as possible in any scientific research regarding diseases of the nervous system. There are many well known authors of scientific works who have the late Dr. Downey to thank for his valuable aid. He was keenly interested in the activities of the British

Medical Association, and has delivered many interesting addresses at meetings of the Branch in Adelaide, his last paper being one on *dementia præcox*, about eighteen months ago.

He was regarded with great respect by the Judges of the Supreme Court and the members of the legal profession, both for his profound knowledge of his subject and the strict impartiality of his evidence. I know that he was proud of the fact that his integrity and honesty of purpose were so clearly recognized by the judiciary.

He had a most orderly brain, coming rather slowly to a decision, which, once made, he never altered, and was rarely wrong.

His death has caused a profound depression among the staff and patients of the institution in which he worked for twenty-seven years, and his courtesy, understanding, and friendly sympathy will be long remembered with gratitude by thousands of patients and their relatives.

From the beginning of his career, the work of the Army Medical Corps appealed to him, and although only fifty-five years of age at death, he had served his country in two campaigns, the Boer War and the war of 1914-1918. Being closely associated with him for two years on service, I feel confident in saying that no commanding officer in the Australian Imperial Force was more loved and respected by his officers, non-commissioned officers, and men than was Colonel Downey. He commanded the Eleventh Field Ambulance, was awarded the Distinguished Service Order after the Messines battle in 1917. In November of that year he was promoted to the rank of Colonel and to the position of Assistant Director of Medical Services of the Fifth Australian Division. This position he held at the time of the armistice. His knowledge of military tactics, his belief that nothing was more likely to upset the morale of the soldiers than the tardy evacuation of their wounded and sick comrades, and his organizing ability earned for him the respect of those in high command, and as Assistant Director of Medical Services he was mentioned in dispatches twice in 1918. He kept a complete diary with meticulous care for three years on service, and if the personal element of this could be eliminated it would be a valuable asset to the War Museum. He never missed a reunion of the South African returned soldiers in Adelaide.

The sympathies of every member of the British Medical Association in South Australia and the other States are with his widow and only son, Don.



## Congress Notes.

### AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

THE Executive Committee of the Fourth Session of the Australasian Medical Congress (British Medical Association) announces that the following arrangements have been made with the Commonwealth Railways. In view of the fact that members of Congress will be obliged to take long journeys, all systems have agreed: (i) That tickets may be issued to enable the holders to arrive in Hobart seven days prior to the Congress. (ii) That members of Congress will be permitted to commence the return journey within one month of the opening date of Congress, that is, not later than February 15, 1934.

The Executive has decided that the subject of cancer shall be considered by a full session of Congress and has fixed as a tentative date for the discussion Tuesday, January 16, at 9.30 a.m.

#### Arrangements Regarding Motor Cars Brought to Tasmania.

**Police Registration.**—All visitors to be notified that it will be necessary for them to bring their driving licence.

**Registration.**—In the case of visitors from Victoria and New South Wales, it is better for them to attend at the Tasmanian Tourist Bureau in their own State and have their registration arranged. This will save them any trouble on arrival in Tasmania and will not necessitate their attendance at the Hobart Police Office. In the case of visitors from Queensland, South Australia, Western Australia and New Zealand, it will be necessary for them to attend the Police Office and sign certain forms and regulations.

**Landing Charges, Wharfage, et cetera.**—It is essential that all visitors with motor cars be instructed to pay freight at their home port and bring bill of lading with them. It has been arranged for a representative of the Marine Board to stamp the bill of lading and collect ten shillings wharfage charge. This will save a visit to the Marine Board Office.

If these instructions are carried out, it will mean that visitors from Victoria and New South Wales will be able to drive their motor cars from the wharf without any delay whatsoever.

Unfortunately, visitors from other States and New Zealand will have to attend the police station in person, as the Traffic Department will not allow any person other than the owner of the car concerned to make the necessary declaration. It will be arranged to have such visitors taken to the police station, and everything will be made as easy as possible for them.

Any further information can be obtained from Dr. E. A. Rogers, 153, Macquarie Street, Hobart.

#### Fishing in Tasmania.

Members of Congress who are anglers are advised to visit the waters for which Tasmania is famous. This visit could be fitted in either before or after Congress.

The lakes recommended are the Great Lake, Penstock Lagoon and Lake Leake.

Regarding the Great Lake, the fishing there consists of rainbow and brown trout, and quinnat salmon. The rainbow trout caught are greatly in the majority and average about four and a half pounds, although fish up to twelve pounds have been occasionally captured. The brown trout are more seldom hooked, but are usually larger, several fish up to fifteen pounds being caught this year, one of this size on the wet fly.

The rainbow trout rise readily to the dry fly and are usually caught by this method. Gillie's beetles are about the most successful fly used, although the wet fly is also very successful. Spinning is very good for those who prefer this method.

The Shannon River and Lagoon can also be fished from the southern end of the lake. These are entirely dry fly

waters, and when the fish are rising good bags can be expected, the fish averaging about three pounds and the type of fishing being most attractive.

The road round the western shore of the Great Lake is now practically completed and will be finished before next season, so that the whole western shore of the lake will be accessible by motor car.

Grub fishing, which was ruining the fishing at the north end, has now been prohibited, and this portion of the lake should be very attractive. The quinnat salmon have grown to a size of about six pounds, and large numbers should spawn this month. Many were caught this year on spinner and wet fly, one being caught on the dry fly. The prospects of the fish for next season are unknown, as the adult fish may spawn and die out.

Rooms may be reserved with: W. Williams, Rainbow Chalet (North End), Great Lake; W. Williams, Accommodation House, Miena.

In Penstock Lagoon, the size of the brown and rainbow fish has much decreased this last season. The type of fishing is dry fly. Visitors would have to camp, as there is no accommodation house.

In Lake Leake the rainbow trout have very much improved this year, and last season the sport was excellent. The fishing is done from boats provided by the accommodation houses, which also provide rowers when required. Dry and wet flies are used, the latter probably being somewhat more successful. There are also a fair number of brown trout in this lake, which provide good sport. The average weight of fish is about four pounds.

Rooms can be booked with: M. Coghlan, Government Accommodation House, Lake Leake; P. J. Brodribb, Lake Leake.

Members of Congress intending to include a fishing holiday would be well advised to book as soon as possible, as accommodation at the Great Lake and Lake Leake is somewhat limited. It is advisable to bring a motor car if possible; if this is not convenient, a car can be hired to take passengers to and from the lakes.

Dr. Terence Butler, 144, Macquarie Street, Hobart, will be pleased to answer all queries as to accommodation, tackle required et cetera.

## University Intelligence.

### THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on June 12, 1933.

The following degrees were conferred in person:

**Bachelor of Medicine and Bachelor of Surgery:** Richard Miller Brent, Malcolm Thomas Drummond, Jack West Lowe.

**Bachelor of Medicine:** Neil Ancheson Gordon, John Kingsley, Philip Thornton Millard, Irwin Lionel Smith.

The following degrees were conferred *in absentia*:

**Bachelor of Medicine and Bachelor of Surgery:** Elizabeth Frances Lois Laurie.

On the recommendation of the Professorial Board, it was decided to promote Dr. E. A. Briggs (Lecturer and Demonstrator in Zoology) to the grade of Assistant Professor.

On the recommendation of the Cancer Research Committee, Assistant Professor G. H. Briggs was appointed a member of the Research Advisory Committee.

On the recommendation of the Professorial Board and the Board of Studies in Pharmacy, it was decided to establish a Diploma in Pharmaceutical Science, to be styled (Dip.Pharm.).

It was decided to adopt a suggestion from the New South Wales Medical Board that thumb-prints and signatures of recipients be affixed to diplomas issued to graduates in the Faculty of Medicine.



The conditions of tenure of the John Harris Scholarship were amended by the addition of the following paragraph:

Holders of this Scholarship will be exempted from the provisions of the second clause of By-Law, Chapter XXIV, Paragraph 2, in the event of their transferring temporarily to the Faculty of Science for the purpose of proceeding to a degree with honours in a subject of the medical curriculum.

## Correspondence.

### RADIATION THERAPY IN CANCER OF THE CERVIX UTERI.

SIR: I have read with interest the account in THE MEDICAL JOURNAL OF AUSTRALIA of June 3, by Dr. John Blewett and Dr. M. B. Johnson, of the technique used at the Perth Hospital in radiation therapy of cancer of the uterine cervix.

The method is described as Regaud's, but differs from it in not employing a colpostat—corks only seem to have been used—in filtration, and in dosage.

The colpostat, characteristic of the Regaud technique, consists of two corks mounted at the opposite ends of a watch spring about 10 centimetres long in such a fashion that their longer axes are at right angles to the spring and parallel to each other. The spring is of importance in that it forces these corks well out into the lateral fornices where they help to cross-fire the cervix and irradiate the parametria at least to some extent, and it also secures them from falling back against the recto-vaginal septum with risk of radium necrosis and subsequent fistula. The safety of the recto-vaginal septum is a matter of the utmost importance.

One or two further corks may be wedged in between the original ones of the colpostat. This usually firmly fixes them and little packing is needed. I have not personally found it necessary to suture the uterine applicator in place or to close the introitus, whether using the Stockholm or the Paris technique.

The filtration used by Regaud for the uterine dose is reasonably similar to that used by the authors, though he has latterly employed a secondary filter of 0.1 millimetre of aluminium inside the gum elastic container. For the vaginal dose, however, he employs a primary filter of 1.5 millimetres of platinum. Less than this he considers undesirable.

I think that Dr. Blewett and Dr. Johnson are inculcating a dangerous doctrine when they advocate the use of up to 12,000 milligramme-hours in dosage. The average dosage at Paris is 60 millicuries destroyed, 30 millicuries destroyed for the uterine dose and the same for the vagina, or 3,000 milligramme-hours in all. Regaud gives 35 millicuries destroyed as the outside permissible dose for the vagina, and Heyman of Radiumhemmet, Stockholm, considers that 4,500 milligramme-hours (33.7 millicuries destroyed) is the safe limit. No immediate damage may be apparent with dosage above this figure, but radium necrosis is apt to follow, even years later.

I would refer the authors of the article to a full account of Regaud's technique by A. Lacassagne, in the *Archives de l'Institut du Radium de l'Université de Paris*, Volume II, fasciculus I, page 95 et sequentes. This gives a clear and detailed account, including all figures of dosage and filtration.

Yours, etc.,

North Terrace,

Adelaide,

June 10, 1933.

JOHN MAYO.

### COAL MINER'S LUNG.

SIR: Dr. Cutler, in his letter of June 3, points out that my opinions on the radiography of dust fibrosis are amusing, scathing and rabid, but why, Sir, does he bother about these minor defects? What I am concerned about

is lest anyone should kick away the foundations of my opinions which would then fall down flat like the wall of Jericho and without Dr. Cutler's indignant blast. I will not apologize for being amusing, it's too rare a quality; if my criticism is scathing, it should be confuted all the more easily; if rabid, and Dr. Cutler has been bitten, then he will only be infected by a spirit of inquiry, and this is not a disease, not even among radiologists. Would he allow me to direct this spirit of inquiry? I want him to study the report of the Technical Commission of Inquiry at Broken Hill in 1920—this on the point of scientific attitude. He would profit a great deal by doing this. I have read it repeatedly with pleasure. When he has finished his reading and he is asked what was the pathological basis for radiographic interpretation at Broken Hill in 1920, he will answer brightly: Cases 7 and 8, giving brief details of each as recorded. For a little exercise and to help us all and deliver us from eye-wash he could, in a couple of hours, answer the following questions.

What is the pathological basis for the radiological interpretation of the following:

1. Cases of simple silicosis in Sydney sandstone workers?
2. Cases of simple tuberculosis in Sydney sandstone workers?
3. Cases of silicosis and tuberculosis in Sydney sandstone workers?
4. Cases of dust fibrosis in coal miners in New South Wales?
5. Cases of dust fibrosis and tuberculosis in coal miners in New South Wales?
6. Cases of tuberculosis in coal miners in New South Wales?

Of course it is my duty and pleasure to help him.

Yours, etc.,

CHARLES BADHAM.

Office of the Director General of Public Health,  
Sydney.

June 12, 1933.

### "DECENTLY AND IN ORDER."

SIR: This is an age of specialization and individualism. The first seems destined to self-destruction through excessive inbreeding; the second, with a future even more gloomy, is, at times, a present clog on the wheels of social intercourse. That, in the domain of curative medicine, the specialty of surgery is an inevitable and a beneficent element in that system of division of labour whereon civilization has been built, no contributor to the correspondence columns of this journal will be likely to question, though the social Mendelist might desire a word on its matings. But, in the manner of their ordered performance of the daily round and common task allotted to them as members of a social community its individual exponents exhibit, I suggest, in one respect, an obliviousness to social convenience that is little short of a public nuisance. "What's in a name?" it has been asked in the mood of Pilate; but to the ordinary man of affairs the answer is, "Everything"; and the trouble about the surgeon is, how in everyday life we are to address him.

Let me prove the existence of a real dilemma, and not the fabrication of an "Aunt Sally", by reference to the notice paper of the New South Wales Branch of the British Medical Association for the fifteenth instant. On the first page of this notice, in the agenda to a "Clinical Meeting" of the Branch, appear the names of eleven Doctors ("Dr.") and fourteen Misterns ("Mr."), who are severally concerned in demonstrating to their fellow doctors and misterns various and sundry physical disabilities. Though empiric, the allocation of the title "Dr." and "Mr." appears to be consistent with some pre-arranged plan. But on the second page of the notice, in reference to an "Ordinary Meeting" of the Branch, to be held "in conjunction with a Meeting of the Section of Surgery", a certain distinguished specialist who, in the first page, appears as "Mr." is here dignified (?) as "Dr."

On seeking explanation one has to presume that he speaks here not as a surgeon, but as one with those who belong to the "Ordinary" element in the combined meeting—perhaps also because his subject, "The Treatment of Varicose Veins" and of "Hæmorrhoids", is one which physicians—even consulting physicians—have claimed as their own. What, I seriously ask, is the proper designation in correspondence and address of this medical practitioner? Is he to be "Mr." (and "Esq. F.R.A.C.S." in correspondence) in formal address and on official notices concerning his specialty; and to be "a real doctor" and addressed as such in everyday life and when he descends (or ascends?) to deal with "medical" diseases. Is he a surgeon at one time and a doctor at another? How, in short, is one to "do the right thing" in this social dilemma: a problem that may not be looked on as trifling or academic when it concerns the relations between the public and the members of an important and dignified profession.

The matter is made the more difficult and the scope of the discussion may be widened by reason of the fact that the practice in this respect differs in the different States almost as widely as does the legislation that determines the decision of the sundry medical boards whether the (ostensibly) qualified candidate for registration is or is not a fit and proper person to be entrusted with official responsibility for the bodily welfare of citizens of Australia, and therein to share in the legal monopoly conferred thereby. On this important matter Dr. Fetherston has recently, with his usual cogency, pointed out defects in the constitution and standing of the Medical Board of New South Wales. His communication (I suggest with the deference due to so eminent a publicist) just falls short of being statesmanlike and constructive, since he confines his strictures and his exhortation to a single State. Surely, what is true of New South Wales is equally imperative on every State in Australia. In the matter of this anomaly—one that lays us open as a nation to ridicule even more justifiably than does our multiple railway gauge—I will, indeed, be bold and suggest that the one and only permanent solution is central control. In respect to both the matters under discussion, surely the time is ripe for integration and order, through the Council of the Royal Australasian College of Surgeons in the one case, and the central Council of the British Medical Association in Australasia in the other.

Yours, etc.,

A. GRAHAM BUTLER.

Duntroon,  
Canberra, F.C.T.  
June 19, 1933.

#### AN ECONOMIC COMMENTARY AND DIAGNOSIS.

SIR: Policies, plans and systems are the outcome of philosophies, and philosophies can only be compared and measured on the definitions of the key-words used. In economics the key-word is surely "credit".

Any philosophy that assumes a wrong meaning to a key-word as a correct meaning is building up a pack-of-cards structure. "A rose by any other name smells just as sweet", and credit cannot be given a chameleon-like construction to suit the fancy of any particular reformer or planner.

Neither money, resources, "confidence", nor man-made tools of production are essential credit, and I do not believe credit has ever been correctly defined—and there are 300 of such! Here is the three hundred and first, namely: Credit is supply or wealth, namely, everything pertaining to an individual or to a nation, hence individual credit or national credit.

Owing to competition, supply, credit or wealth has to be differentiated into:

1. Capital or credit in the sense of agencies of employment for profit (otherwise only potential supply, credit or wealth).

2. Labour in the sense of employees.

The agencies of employment for profit (capital) are:

1. Inventiveness, organization and management (individual and collective).

2. "Confidence" on the part of "stored wealth" (goods and services and legally authorized currency and securities) awaiting investment at home and abroad.

3. Resources—natural and developed.

4. Acts of providence (seasons *et cetera*).

Number 1 entirely dominates numbers 2 and 3.

Employees (labour) are:

1. All manual, clerical and professional avenues of occupation.

2. Machinery and attendant operators.

3. Certain domestic animals and attendants.

"Capital and labour" thus described, cooperate through "government" to produce goods and services to exchange (internally and externally) with other goods and services and to meet the demand or market value, local or international.

According to the relation of that national supply to the demand or market value in the markets of the world, so eventually is that nation's rate of exchange stamped on that nation's note issue.

Neither banks nor money are responsible for an adverse exchange rate, but governments, who are the representatives of the citizens, in their borrowings and manner in which those borrowings are invested which reacts on industry by taxation to balance trade. Money does not control the means of distribution. In Australia governments do this through control of railways, roads and ports. Banks do not print notes to suit themselves, but to meet the requirements of the "profitable" industry of their clients.

Without "profitable" industry money is not wanted, as industry stagnates.

Unemployment is either due to mismanagement (national or individual) making costs too high for profit, or to machinery replacing man labour and thus crulling its own market, or to monopoly of the means of production and distribution. Tariffs are inevitable owing to international competition. Subsidies can only be afforded by efficient nations.

Money is any commodity that is used as a medium of exchange. Gold, being the most easily negotiable commodity, owing to its intrinsic qualities, is hence used as the "international medium", and consequently all domestic or internal currencies have to be measured on gold, but such currencies stamp their own value through their own national price level as against world price level or ability to earn gold as profit.

Gold is thus the "yard-stick" of currencies, and the rate of exchange the "yard-stick" of supply or credit.

The "yard-stick" of value of gold and of everything else on earth is the world price level.

Money, in the form of a domestic or national medium of exchange, may be: (a) legally authorized currency (gold and domestic), (b) bank cheques and drafts, (c) money orders and postal notes.

The "power that creates and destroys money" is the power that creates or destroys "profitable" industry, that is, agencies of employment for profit or otherwise.

Our existing Federal system and State rights (exemplified particularly through seven separate railway systems to prohibit interstate "free trade") is a first class machine to provide "unprofitable" industry and eventually put a nation out of existence through a tariff to "protect" both sectional interests and such economic anomalies.

The teachings of neither Henry George nor Major Douglas (neither of whom appears to realize the true meaning of credit or takes into consideration the factor of democratic government) touch the real issue so far as this country is concerned, and which is wrapped up in amendments of our Constitution such as to provide an appropriate relationship in function between existing States and Federation and to multiply the inherent right of the British citizen to "local self-government" by Federal power to extend such amended State constitutions to new States as reasonably required, and founded on reasons of national economy, unity and security.

Yours, etc.,

138, Darlinghurst Road,  
Sydney,  
June 6, 1933.

NORMAN PERN.

### Books Received.

- ENURESIS OR BED-WETTING**, by R. J. Batty, M.D., B.Sc., D.P.H.; 1932. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 91, with illustrations.
- A SHORT PRACTICE OF MIDWIFERY FOR NURSES**, by H. Jelliffe, B.A., M.D., F.R.C.P.; Ninth Edition; 1933. London: J. and A. Churchill. Crown 8vo., pp. 519, with seven plates and 183 illustrations in the text.
- CLINICAL DISORDERS OF THE HEART BEAT: A HANDBOOK FOR PRACTITIONERS AND STUDENTS**, by Sir Thomas Lewis, C.B.E., F.R.S., M.D., D.Sc., LL.D., F.R.C.P.; Seventh Edition; 1933. London: Shaw and Sons, Limited. Demy 8vo., pp. 139, with illustrations.
- THE PRACTICAL MEDICINE SERIES OF YEAR BOOKS: GENERAL THERAPEUTICS**; Series 1932; 1933. Chicago: The Year Book Publishers. Crown 8vo., pp. 448.

### Diary for the Month.

- JULY 3.**—New South Wales Branch, B.M.A.: Organization and Science Committee.
- JULY 4.**—New South Wales Branch, B.M.A.: Council, quarterly.
- JULY 5.**—Western Australian Branch, B.M.A.: Council.
- JULY 6.**—Victorian Branch, B.M.A.: Branch.
- JULY 6.**—South Australian Branch, B.M.A.: Council.
- JULY 7.**—Queensland Branch, B.M.A.: Branch.
- JULY 11.**—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- JULY 14.**—Queensland Branch, B.M.A.: Council.
- JULY 18.**—New South Wales Branch, B.M.A.: Ethics Committee.
- JULY 19.**—Western Australian Branch, B.M.A.: Branch.
- JULY 19.**—Victorian Branch, B.M.A.: Clinical Meeting.
- JULY 20.**—New South Wales Branch, B.M.A.: Clinical Meeting.
- JULY 25.**—New South Wales Branch, B.M.A.: Medical Politics Committee.
- JULY 26.**—Victorian Branch, B.M.A.: Council.
- JULY 27.**—South Australian Branch, B.M.A.: Branch.
- JULY 27.**—New South Wales Branch, B.M.A.: Branch.
- JULY 28.**—Queensland Branch, B.M.A.: Council.

### Medical Appointments.

Dr. W. A. R. Sharp (B.M.A.) has been appointed a Government Representative on the Board of Directors of the Sydney Hospital, New South Wales.

Dr. W. N. Newton (B.M.A.) has been appointed Government Medical Officer at Dora Creek, New South Wales.

Dr. F. B. Uther (B.M.A.) has been appointed Government Medical Officer at Cobar, New South Wales.

Dr. R. D. Fisher (B.M.A.) has been appointed, pursuant to the provisions of the *Workers' Compensation Act 1923*, to be Certifying Medical Practitioner at Gisborne, Victoria.

### Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi and xvii.

- ALFRED HOSPITAL, MELBOURNE, VICTORIA:** Assistants to Indoor Surgeons.
- FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA:** Resident Medical Officer.
- HOBART PUBLIC HOSPITAL, HOBART, TASMANIA:** Junior Resident Medical Officer.
- LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA:** Resident Medical Officers.
- MOSSMAN HOSPITAL, MOSSMAN, NORTH QUEENSLAND:** Assistant Medical Officer.
- ST. GEORGE DISTRICT HOSPITAL, KOGARAH, NEW SOUTH WALES:** Senior Resident Medical Officer.
- THE GIPPSLAND HOSPITAL, SALE, VICTORIA:** Resident Medical Officer.
- THE RACHED FORSTER HOSPITAL FOR WOMEN AND CHILDREN, SYDNEY, NEW SOUTH WALES:** Honorary Medical Officer (female), Junior Resident Medical Officer (female).
- WALLSEND MINING DISTRICT HOSPITAL, WALLSEND, NEW SOUTH WALES:** Resident Medical Officer.

### Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 136, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

### Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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